

THE
CARLSBAD TREATMENT
FOR
TROPICAL AILMENTS
IN INDIA.

L. T. YOUNG, M. D.

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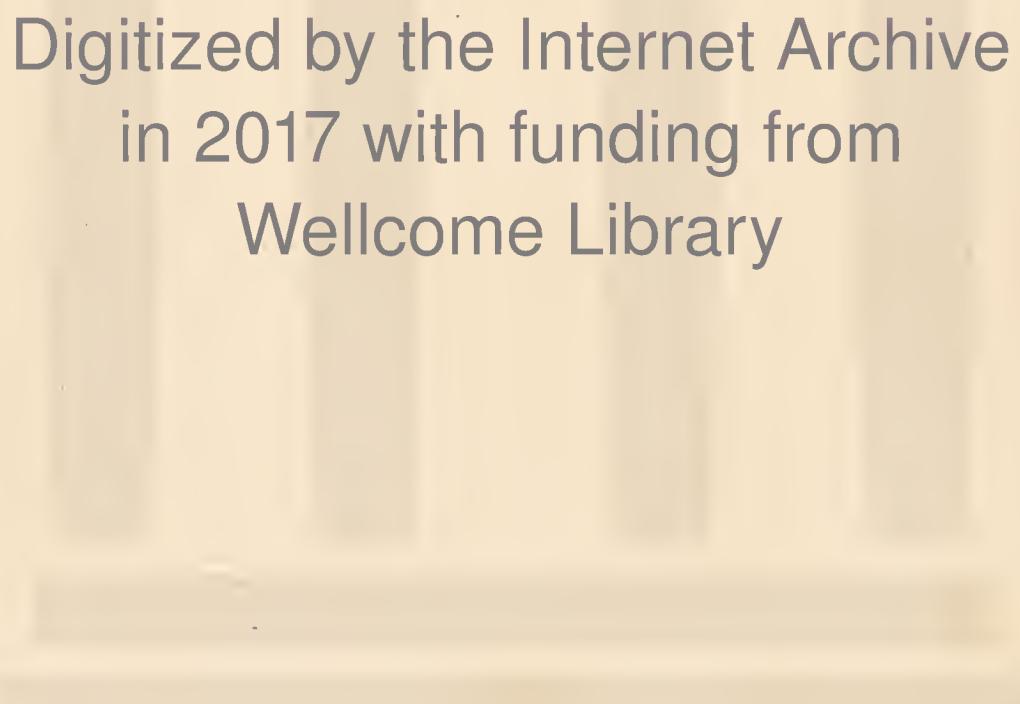
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D. G. Campbell
6 May 1907

THE
CARLSBAD TREATMENT

FOR

TROPICAL AILMENTS

AND

HOW TO CARRY IT OUT IN INDIA.

BY

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PREFACE.

HAVING myself felt the want of some practical direction for carrying out the Carlsbad Treatment for Tropical Ailments in India, I thought that it might possibly prove of use to give the result of six years practical experience of it.

Time and experience have not shaken but increased my confidence in the efficacy of this treatment.

It must be clearly understood that the directions in this book are not intended to supplant medical advice.

L. T. YOUNG, M.D.

UMBALLA : }
September 1894. }

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THE
CARLSBAD TREATMENT
FOR TROPICAL AILMENTS
AND HOW TO CARRY IT OUT IN INDIA.

Chapter I.

HOW TO GET TO CARLSBAD : HINTS ON LOCAL CUSTOMS, ETC.

ANYONE who has lived in the tropics and been exposed to malarial influences will be the better for a course of Carlsbad. Its main effect may be concisely stated to be a thorough cleansing of the digestive and blood-purifying organs, so that "youth is renewed like the eagles."

The course of Carlsbad treatment **can be easily done on three months' privilege leave**, its duration being usually only three weeks. In the more chronic cases of constitutional disease, dyspepsia and obesity it may, however, be prolonged to four or six weeks.

Routes.—On three months' privilege leave you must go by P. & O. to Brindisi and from there by train.

If you have longer leave, go either direct to Trieste by Austrian Lloyd liner, or if you wish a charming trip, go by Rubbatino to Naples, and then leisurely

through Italy, spending a few days at every place of interest on the way. The journey from Trieste to Carlsbad occupies thirty hours, and leads through Vienna, perhaps the most charming capital in Europe, specially endeared to me by the happy time I spent there as a student.

If you go from London to Carlsbad the Queenboro'-Flushing is the best route. Only 56lbs. of luggage will be carried free. Book your luggage through direct to Carlsbad, and take only a hand-bag and rugs for the journey. Otherwise you will have great trouble with the Customs crossing each frontier on the way. Should you intend breaking the journey, book your luggage only to the place at which you propose doing so and re-book from there on to Carlsbad. This journey occupies about thirty-one hours. If you wish to have endless trouble about your heavy luggage, then you are advised to book it by goods train. Be civil to the Customs officials as otherwise you may be delayed, miss your train, and suffer great inconvenience. I subjoin in a footnote information regarding the routes and fares both from Italy and London which has been kindly supplied me by Messrs. T. Cook & Son, Bombay.

| | 1st class. | 2nd class. |
|--|------------|------------|
| Trieste to Carlsbad <i>via</i> Vienna £5 3 3 | £3 13 9 | |
| Brindisi to „ <i>via</i> Bologne, Munich, &c. £8 5 6 | £5 18 9 | |
| Naples to „ <i>via</i> Rome, Genoa, Milan £9 6 11 | £6 14 0 | |
| London to „ <i>via</i> Queenboro' ... £5 19 0 | £4 6 10 | |
| Bombay to Trieste by Austrian Lloyd, | | |
| 6 months' return Rs. 960 | | Rs. 576 |
| Bombay to Naples by Rubbatino, 6 months' | | |
| return Rs. 900 | | Rs. 612 |
| Bombay to Brindisi by P. & O., 3 months' | | |
| return Rs. 1,000 | | Rs. 650 |

Procuring apartments: Rules regarding them.— On reaching Carlsbad get your luggage put on either a fiacre * (two-horse cab) or a droschke (one-horse), according to the amount of it, and drive to König's Villa, which is in the Schlossberg, the English and healthiest quarter of the town. The König's Villa apartments will be found expensive, but are the best. Near it at the König Ottokar, Erzherzog von Edimbourg, or any of the houses in the same street, you will be able to procure cheaper rooms. König's Villa is always full in mid-season†, and rooms are engaged months in advance, but at the beginning or end of the season you might get into it.

This was the method I adopted travelling *en garçon*, and arriving at Carlsbad by the 2 or 3 P.M. train whilst it was daylight. If you have ladies with you, it is best to go to a hotel for a day, taking great care to notify in writing that you take your rooms there *by the day* and then look about for other apartments. Rooms once engaged cannot be given up without paying a week's rent in lieu of notice. If you have engaged them for three weeks or a month definitely, and dislike, or wish to leave them, then you must pay the rent for the entire time. Your having done this gives you no claim on the rooms, and you cannot sublet them. Beware of lodging-house touts, who may lead you off to distant or inconvenient parts of the town and induce you to take rooms, which you will find yourself unable to give up afterwards save at a loss.

* Fiacre fare 2 gulden plus 50 kr. for luggage; droschke fare 1 gulden 20 kr. plus 30 kr. for luggage.

† The season lasts officially from May to October.

Bachelors usually take only one large room furnished as a bed and sitting room. For one such room I paid in August (the middle of the season and most expensive time) 18 gulden per week. The gulden or florin was the same as the rupee when that much-abused though necessary coin was worth 1s. 8d. Twelve gulden are still, I believe, worth £1.

The only other method of procuring rooms is to write in advance to some house-agent. The physician to whom you are sent, might, as a very great favour, take apartments for you: but professional men have quite enough to do without undertaking commissions of this kind.

When engaging rooms ask what is the **extra charge for attendance**, or if it is included in the rent. Whether you pay extra for attendance or not, the servants are sure to expect gratuities on your departure. Most of the landladies have English-speaking daughters or sons through whom negotiations are conducted in case you don't speak German.

All **meals are taken outside** at a "Restauration or Gast Haus," where terms are strictly cash. Chits are not accepted—so don't wander out without money in your pocket as we are wont to do in the East. The food at König's Villa Restauration is good and largely patronised by the English and Americans, but Pupp's and many other hotels and eating-houses are also good. This system is very convenient and economical, as you can feed wherever you may happen to be.

Customs at Restaurants.—At an Austrian Restaurant a call of "Kellner" will bring a waiter. When ready to go the call of "zahlen" (to pay) brings a

head waiter or "zahlkellner," to whom a small gratuity of from 10 to 30 kreutzers (*2d.* to *6d.*) is made, although he has done nothing for you. The Austrians themselves usually give only 5 kreutzers = *1d.* Ordinary waiters, except from extremely liberal people, receive no gratuity. Their ambition is to become "zahlkellners" who get all the gratuities given as a matter of course by every guest. Even if you stay at a hotel you will probably have to pay cash for every meal. When I was at Carlsbad in 1888, there was not a table d'hôte in the town. The cost of food is moderate and about the same as at an Indian hotel; that of liquor, is very much cheaper. A good cigar or cigarette is difficult to obtain in Austria. American tobaccos of good quality can be had.

Having settled in your rooms and having had a good night's rest after a long and tiresome railway journey, you should the following day **consult one of the local physicians** who thoroughly understand the action of the waters and the proper courses to adopt. Drs. Kraus and Abeles are, I believe, the leading physicians. The latter having practised in Egypt has had the benefit of practical experience of tropical diseases. All the Carlsbad doctors are very busy men, and you should draw up a succinct statement of your case in writing, omitting all irrelevant details and present it on your first visit. It will be still better if you can get a few brief lines, describing your case from your own doctor in India. Medical fees on the Continent are very moderate, and you need not fear having a heavy bill to pay. On no account try to go through the course without the advice of one of the local physicians.

You must next provide yourself with one of the Carlsbad regulation **glass-drinking mugs**. This contains about 6 ounces, is provided with a spring clip and shoulder strap by which to carry it. With this strapped over your shoulder you will about 6-30 A.M. on the following morning sally forth to begin your course of water-drinking. If you are at all a self-conscious individual, you may fancy the mug and strap equipment makes you look rather like a fool, but when you see everyone else similarly adorned, the feeling will wear off.

Before concluding these severely practical directions, let me say a few words on the various **taxes** you will have to pay. The visitors during the season exceed the permanent population, and, considering how royally the place is arranged and maintained for their benefit, it is only fair they should contribute towards municipal expenses.

Over 30,000 persons annually resort to Carlsbad, and the number is yearly increasing.

A local ‘kurtaxe’ of 6 florins (increased to 10 in the case of a nobleman or very wealthy person) is levied on every one staying in Carlsbad longer than eight days, and also a music tax of 3 florins per person. The music tax supports the excellent bands which play whilst the visitors drink the waters in the morning, and also at the various cafés and restaurations during the afternoon and evening. Whilst at Carlsbad the visitor’s official generic title is kurgast (guest of the cure). A mineral water spring, to which people resort for medicinal purposes, is in Germany and Austria styled a ‘Bad’ or Bath, and as a summer resort takes the place of the seaside with us. These

places, of which Carlsbad is the chief in Austria, are ruled by the physicians, and they treat brother medicos from all parts of the world really as guests in the kindest manner. Doctors pay no 'kurtaxe' and get baths in the Kurhaus free. Excellent **Reading Rooms** both for ladies and gentlemen, supplied with the best daily and weekly papers of all Europe and America, are open during the entire season in the Kurhaus. The moderate fee of 2 gulden monthly obtains for the kurgast the *entrée* of these rooms.

Letters can be forwarded to the *poste restante*, Carlsbad, until you have a fixed address.

Sperrgeld.—An ancient custom survives in the Austrian dominions which obliges each person entering a house after 10 P.M. to pay the Hausmeister or hall-porter who opens the door, 30 kreutzers. The kurgast will have to pay this if he comes home late.

Chapter II.

AN AVERAGE DAY AT CARLSBAD.

*Method of Conducting the Course there—Diet—
Drink—Amusements.*

Method of drinking the waters.—Early on the second morning of your stay the Hausmeister or porter of your lodgings calls you. Although it is only about 6 A.M., as you dress you hear the bands playing at the various springs. A very hurried toilet suffices, and without having had even the morning cup of tea or coffee,* fasting, armed with your mug and shoulder strap, you sally forth to the spring your physician has recommended. It is usual to begin on some of the colder springs as the Schlossbrunn. The colder the spring is, the greater its aperient effect. As you come along the Schlossberg, a long line of drinkers will be seen in front of the spring moving on slowly down hill, step by step, as each in turn receives his glass of water. The latest comer must always fall in at the end of the line and wait his turn. On receipt of his glass of water, in his own mug, from the Bohemian girls † distributing

* This is allowed to patients who are weak or feeble, or who feel they can't do without it.

† Bohemian peasant girls are great favourites in Vienna as wet-nurses and nursery-maids. These young ladies wear short petticoats reaching only to the knee and high jack-boots. This costume is very comical, but is necessitated by the amount of snow.

it, he must fall out of line and drink it slowly. It *must not* be gulped down in one draught. A short walk is taken for twenty minutes, then you return and fall into line, as before, receiving your second glass. Another short stroll for the same length of time is taken, and lastly, the third glass is drunk.

After this a quiet walk for about an hour is indulged in until time for breakfast, about 9 A.M. At least an hour should elapse between drinking the last glass of water and breakfast. This morning parade of every one at the springs is a most interesting sight. Representatives of almost every nation are there. The beauty and toilettes of many of the Hungarian and Austrian ladies could hardly be surpassed. These ladies are, next to our own countrywomen, perhaps the most beautiful in the world. Most charming walks are cut along the wooded hills about the town where the kurgast can wander shaded from the by-no-means mild rays of an Austrian midsummer sun.

After an hour's stroll, a simple **breakfast** consisting of two soft boiled eggs, a cup of tea, a few plain rolls or some "zwiebach," is taken. A very important item in the "cure" is **that the amount of food taken is strictly limited**, and the kurgast is not allowed to gorge himself. In India nearly all of us over-eat and over-fill our stomachs with fluid. Persistent over-eating has even a more injurious effect on the state of the blood and constitution than over-drinking. When repeatedly over-filled in a relaxed and enervating climate, the stomach becomes permanently stretched and dilated. An ordinary meal fails to fill it. The appetite remains unappeased, and the patient craves for further food in large quantity. This excessive

appetite, instead of being a sign of vigorous health, is often, in India especially, one of disease. Remember then to take only the exact amounts at meals ordered by your physician and to curb the appetite as much as possible.

Serious work, heavy study or attention to business, are forbidden. *Carpe diem*, with restrictions, is the motto of the place. Light reading, conversation, gentle exercise, sight-seeing are the recognized amusements. The charming little bijou, Carlsbad theatre, also closes early to suit the kurgast.

Smoking is strictly forbidden at the actual time of drinking the waters. One pipe or cigar after meals thrice daily is allowed, but all excess must be avoided.

As you progress with the course you will become aware of the peculiar **effect of the waters** on your memory; names, facts or recent events can be recalled with difficulty, delay, or, in some cases, not at all. You may also find that your nights become restless, and sleep only visits you capriciously. This will be more especially the case if you have been indulging in any exciting occupations, continuous card-playing for money, heated political arguments, &c. Such methods of passing the time should be avoided. If sufficient sleep is not obtained at night, an afternoon nap, at least a couple of hours after the midday meal, is allowable. All these are transient symptoms of trivial import and need excite no alarm.

After breakfast the kurgast amuses himself by conversation, correspondence, &c., until about 11 A.M. when he has been ordered by his physician on alternate days to have baths in the mineral waters of the springs. **Baths** of all kinds are obtainable at the

Kurhaus. Great care should be taken to avoid chills after bathing. Residence in the tropics renders the European constitution peculiarly liable to them. A good plan is to adjourn, after the bath to the Kurhaus Reading Room, until 1 P.M., the time for Mittagessen, or midday dinner, arrives.

This **midday meal** between 1 and 2 P.M. usually consists of soup, fish, plain roast or boiled fowl, or joint with certain vegetables, and a light pudding or stewed fruits.

Diet.—The following **articles** are rigidly excluded from the Carlsbad dietary :

Fresh fruits.

Salads.

Acids, *e.g.*, vinegar, lime juice, tart or bottled fruits,
&c.

Cheese.

Tinned, dried, or smoked fish.

Butter.

Nuts.

Highly seasoned or greasy dishes (such as curries).
Sweets are also to be avoided.

Strong Spanish or Portuguese wines, liqueurs or
raw spirits.

What to drink.—Weak spirits and water, light, dry red wines, of which the Austrian Vöslauer and the Hungarian Carlowitz are the very best, are allowed with the midday and evening meals. Beer is also permitted to many. I would, however, **caution** Anglo-Indians and residents in the tropics **against beer** and malt liquors generally. Clinical experience amply shows that beer, porter, and malt liquors seldom agree with patients suffering from the various forms of functional

derangements of the liver which affect dwellers in the tropics. Recall your dinner-table experiences in India. How many men have you not heard refuse beer perhaps apologetically and regretfully remarking that they were no longer able to take it: they had been obliged to give it up years ago. Why? Because they found it so disagreed with them, that if they persisted in taking it, they got ill. I estimate that about 75 per cent. of beer-consuming Britons are, after a few years' residence in the tropics, forced to abandon it. The remaining 25 per cent. are generally individuals who have the digestion of ostriches, and I have seen such men take strong export stout all through the Red Sea at its hottest. That the British soldier should be, without discrimination, allowed to consume a daily quantity of strong beer, has always appeared to me a great dietetic error, and one that must produce an enormous amount of inefficiency. No hard-and-fast rule can be laid down about total abstinence or the reverse. It is purely a matter of individual constitution. Some people are injured by alcohol in any form and in the smallest quantities. Others can't do without it. The gist of scientific facts bearing on the subject is that alcohol as an habitual article of diet is unnecessary; that whilst it, to a certain extent, stimulates digestion, it has the grave defect of interfering with elimination of waste products from our bodies.

To the gouty, rheumatic, and possessors of weak livers, beer or any malt liquor is a veritable poison, and the sooner these individuals recognize this fact, the better. Champagne, port, liqueurs, and short drinks generally have an equally injurious effect.

It is a curious and often observed fact that patients who are upset by beer can, without the slightest ill-effect, take equivalent quantities of claret or whiskey and water. There is something in malt liquor which interferes with the functions of the liver in certain constitutions. To be on the safe side avoid the fascinations of Pilsener and Lager. Take Vöslauer instead. **Giesshübler** is an excellent table water much used at Carlsbad. It is a natural product and comes from a spring at Giesshübl-Puchstein, some miles from Carlsbad. An omnibus plies to it daily, and the trip makes a pleasant outing through most charming scenery.

The afternoon is spent in pleasant rambles along the shaded roads in which this Spa is so rich. Afternoon tea, for those injudicious enough to take such an unnecessary and injurious refection, can be had at any of the cafés scattered along the usual routes. An early return to Carlsbad is desirable to avoid the cold of approaching night.

The **evening meal** (Abendessen) is partaken of about 8 P.M., and usually consists of rostbraten—a kind of stew—fish, boiled eggs or roast fowl. About 10 P.M. nearly everyone retires to rest.

I have endeavoured to describe an average day at Carlsbad.

Chapter III.

THE BATHS OF CARLSBAD.

Mineral baths.—The simplest form of bath is one composed of the warm mineral water of the Sprudel or principal spring of Carlsbad. Containing as it does a considerable quantity of alkali, its effect on the skin is peculiarly pleasant. All fatty matter and decayed epithelium are dissolved away by it, leaving the skin smooth, soft and velvety. These are the baths usually prescribed for ordinary Anglo-Indian cases. The cost of a Salon bath is 1 fl. 50 kr., and as one is to be taken every second day the total expenditure for baths may be calculated as 1 fl. 50 kr. \times 11 = 16 fl. 50 kr. The temperature of these baths will vary from 90° to 112° F. as the physician directs, and the length of time the patient remains in them from five to thirty minutes.

It is a mistake to suppose that any of the ingredients of the water of a bath are absorbed into the system. The skin is covered with an oily secretion which effectually prevents any absorption from aqueous solutions. If medicinal substances mixed with oils or fats are rubbed into the skin they are absorbed. The same also occurs if they are dissolved in fluids such as chloroform and ether capable of dissolving the fatty secretion of the skin. *Baths act beneficially through their powerful effect on the nervous and circulatory system.* **Cold baths** have a tonic and

bracing effect on the system. Under their influence waste products are more rapidly eliminated from the body, and more rapid absorption of fresh nutriment takes place. The appetite improves, the muscles gain tone and vigour, and the circulation is strengthened. After a cold bath a reaction occurs ; the skin glows, fills with blood, becomes warm and rosy.

Any one in whom this effect is not produced should avoid cold baths.

A most important relation exists between the skin and the internal organs. Whatever chills the skin, drives the blood from it into the internal organs. It is this effect which prevents dwellers in the tropics taking cold baths. Their enfeebled and atonic organs cannot stand the sudden influx of blood. It acts like a chill, and gives them internal congestions. Residence in the tropics produces relaxation of the blood-vessels of our internal organs, and the result is that they almost invariably contain too much blood or are, in other words, in a state of slight chronic congestion. Hot baths, on the other hand, are good for this condition, as they allow the vessels of the skin to distend and become dilated with blood which leaves the internal organs to come to them.

This temporary relief from congestion gives the internal organs a respite to regain their normal tone and a chance to get well again.

When chronic congestion of any organ exists for a long time, an increase of its fibrous tissue with a subsequent contraction and atrophy results.* This shows how mere residence in a tropical climate can

* This is a well-known pathological law.

gradually and insidiously give rise to incurable organic disease, which, like a thief in the night, steals upon its victim without warning and without symptoms. A course of drinking and bathing at Carlsbad is the best thing for removing these tendencies to the onset of organic disease, and giving our organs a fresh and healthy start again. The French, Italian, and Austrian Governments provide courses of such treatment for their soldiers who have been exposed to malarial influences. We require something of this kind in India.

Hot baths have a soothing and somewhat enervating effect on the system. This latter action can be prevented by a momentary cold affusion at the moment of leaving the hot bath. The combination of the hot bath and cold affusion constitute one of the best varieties of the "Russian bath." Hot baths, especially **hot salt water (sool)** act powerfully in relieving internal congestions, such as Anglo-Indians so commonly suffer from.

A good plan is to take hot salt water baths daily on ship-board during the voyage home from India. The best time for a hot bath is before going to bed at night. The reason for this is that then there is less danger of contracting a chill. Another way of avoiding chill is to sponge with a basinful of cold water immediately on leaving the hot bath. This causes a reaction similar to that after a cold bath. Weakness, giddiness, nausea, singing in the ears or fainting* may be caused by taking too hot a bath or

* These are the symptoms of too little blood going to the brain from weakening and exhaustion of the heart by too long immersion and too high a temperature.

staying in it too long. The remedy is to leave the bath and sponge the head or body with cold water. Ammonia or stimulants may also be resorted to. There is an electric bell in every bath-room in Carlsbad by which an attendant can be at once summoned.

Russian bath.—A good form of this is a very hot bath with soap and flesh brush accompaniments, concluded by a sudden douche of cold water. It keeps the skin acting and thus the blood purer. I have seen such a bath daily, ward off gout for many years. It is the best kind of bath for Anglo-Indians, as it combines all the advantages of both hot and cold baths. The body gets heated sufficiently to stand the shock of the cold affusion without injury to the internal organs and a brisk reaction and glow follow at once. There are other forms of Russian hot air and vapour baths.

Mud or peat baths (*Moor Bäder*) consist of finely powdered peat mixed with heated Carlsbad water. It is brought in on a wheeled truck and placed beside a large bath of clean tepid water, in which to wash off the residual peat on coming out. A feeling of fear, repugnance and disinclination to get into the black and dirty mass seizes the patient on first seeing a Moor Bad. Once immersed in it, however, the sensation of warmth and comfort are delightful. The entire body and limbs are enveloped in a huge rest-giving and soothing poultice.

Indications.—These mud baths are of the greatest benefit in malarial enlargements of the spleen and liver, in those feminine diseases where inflammation

about the womb and ovaries has followed on miscarriage, in cases of chronic peritonitis or typhlitis, in chronic dysentery, and in those milder forms of abdominal pain due to tender and congested patches on the interior of the intestines which we meet with in malarial cases. Patients remain in these baths for from twenty-five to forty minutes; very great care and the warmest wraps are necessary to avoid chills after them.

Pine baths (Fichten Bäder) are another very delightful form of bath. The soft young shoots of pine trees are boiled down to the consistence of a pulp. This and a little of the fragrant essential oil of the pine are mixed up in a large bath of hot water. These baths render the skin very soft and smooth. They are of great use in chronic muscular rheumatism. A pine bath and a peat bath are amongst the things everyone going to Carlsbad should make personal trial of.

Steel baths are prescribed for anæmic cases, but as no iron can be absorbed from them, their use must be considered as rather fanciful. When the iron is associated with a considerable amount of carbonic acid gas in solution, the effect is peculiarly stimulating and very suitable for female cases of anæmia. This effect is mainly due to the carbon dioxide and not to the iron.

Electric baths I can personally testify to the efficacy of. Whilst on active service on the Eastern Frontier some eleven years ago, exposure to malarial emanations and damp fogs whilst sleeping out at night, gave me an attack of rheumatism of seven weeks' duration. Slight recurrent rheumatic attacks

kept troubling me until I took hot salt electric baths, and applied electricity vigorously, whilst in them, over the liver. Complete success attended this treatment. The liver must be regarded as the seat of manufacture of rheumatic and gouty poisons. When that organ is stimulated to do its work properly both these affections vanish. They are simply proofs of defective work (imperfect metabolism) on the part of the liver, and in the above case this was due to the action of malaria and chills.

Massage is often advantageously combined with many of the above baths. It is simply a systematic method of rubbing in such a manner as to empty the muscles and tissues of old and stagnant blood and lymph. These fluids are in this way made to join the general systemic flow, and thus compelled to pass through the lungs and liver where they are purified. It is wonderful what a number of morbid sensations and symptoms can be removed by the simple extrusion of this stagnant blood. The rubbing is conducted in the direction of the return circulation, *i.e.*, *towards the heart*. Massage is rather expensive. Some natives do it rather well, as Surgeon-Lieutenant-Colonel Temple-Wright points out in his excellent paper on Carlsbad in the *Indian Medical Gazette* for March and May, 1891. They need, however, to be instructed *not* to rub from the heart towards the extremities as they are so fond of doing. This method of rubbing would be useless. Whoever can take a good walking tour in the hills in Scotland or Switzerland needs no massage. I have many times seen a pedestrian tour of a month or two do more towards the re-establishment of health than could all

the medicines in the extra pharmacopœia. Massage is artificial exercise. It never equals the natural. Patients whilst in the bath should maintain continuous rubbing over the affected parts. Stiffened joints or painful muscles and tendons should be bent, stretched, kneaded, and rubbed.

Carbonic acid baths have peculiar properties worth mentioning. "A strong feeling of heat in a cooler temperature of bath"—all the stimulating characters of the cold bath without any undue lowering of the patient's temperature, vastly increased tissue change and blood formation, with resultant access of health and energy. The Sauerbrunn baths of Carlsbad are rich in this gas as are also the steel baths. Hot air, vapour, douche, Turkish, and all kinds of baths are to be had at Carlsbad.

Necessity for warm clothing.—Warm woollen underclothing should be constantly worn. The morning air at the springs is cold, and as the evening meal is taken at a restauration, cold must be guarded against whilst returning to your rooms. Warm wraps should be invariably taken to the Kurhaus to wear for some hours after bathing. Chills are easily caught. Their effects are difficult to get rid of ; they delay and interrupt the course of treatment.

* Julius Braun's "Curative Effect of Baths and Wells," translated by Dr. Hermann Weber, p. 303.

Chapter IV.

THE ARTIFICIAL COURSE: HOW TO CARRY IT OUT IN INDIA.

Cost of Course—Tropical cachexia—Indications for the course—Contra-indications—Method of conducting artificial course—1st Method—The physiological principle of rest—Relative digestibility of foods—2nd Method—Effects of the water—Late manifestation of its beneficial effects—After-cure—Precautions to be observed—Necessity for a break in the course in India—Season and duration—Necessity for restricted diet.

MANY poor exiles with shrinking incomes and expanding families or unmarried men in the junior ranks of all the services may be glad to learn that a course of Carlsbad treatment can be carried out in India at their own residences or in the hills, in the summer, at a cost of only a few rupees.

The cost of the course at Carlsbad is about £50. This sum includes fares to and from London or Continental port of arrival from India.

Those broken down with continual ague whose trembling hands and broken voices denote the shattered nervous system—the pallid, anaemic, and joyless victims of spleen and liver for whom all the pleasures of existence turn to gall and nothingness—the wreck which chronic dysentery has made out of a strong man, will scarcely realize how much

their sufferings can be ameliorated. They will, however, need change from the malarial plains to the hills.

Away from home and often friends, with only a few hospitals in the entire Empire, fit to properly accommodate Europeans of our class, without European surroundings or comforts—this is perhaps the saddest country in the world in which to be ill. The ‘Land of Regrets’ seems then to merit the name of the ‘never, never land,’ which Australians have given to the tropical parts of Queensland.

It is with the object principally of benefiting, by a course of treatment not sufficiently adopted in this country, those who are unable to afford the trip to Carlsbad that these pages have been written. The prosperity of the Indian public servant is but a shadow of its former glorious self, and most of us grasp eagerly at any means of economising the daily diminishing rupee.

For the sake of convenience, I shall term a course of treatment carried out in exact imitation of that at Carlsbad an “**artificial course**.” During the last five years I have put some hundreds of patients through such courses both of Carlsbad and Homburg treatment with the greatest benefit.

Indications.—Before embarking on the course you should be aware of the conditions and diseases for which the treatment is suitable. Unlike a patent medicine it does not cure everything. *Its sphere is limited to conditions of impurity of the blood arising from imperfect action on the part of the digestive organs.* Such conditions are, as a rule, not of an acute or recent nature.

Mere residence in the plains of India for several hot seasons is, in most cases, quite enough to occasion sufficient inactivity of the digestive and blood-purifying organs to necessitate a course of this treatment. The following symptoms will denote the presence of such a state of affairs—failure of digestive powers, loss of appetite, sudden and irregular attacks of diarrhoea, tenderness and sense of weight and heaviness of the liver and spleen, headache, irritability, lassitude, sleeplessness, loss of power of application and concentration, depression of spirits, sallowness of complexion, falling out of the hair, rapid diminution or loss of sexual power.

For the above combination of symptoms unaccompanied by any actual disease, but attended with considerable functional derangements of many organs, I would suggest the name of "**Tropical Cachexia.**" I shall use this term with this meaning later on.

Amongst the **severer affections** cured or markedly improved are: Malarial cachexia, malarial enlargements of spleen and liver, chronic dysentery and diarrhoea, constipation, anaemia, catarrh and dilatation of the stomach and intestines, painful dyspepsia, gall stones, stone in the kidney? chronic inflammation of the bladder, inflammatory deposits in the peritoneal cavity or about the womb or ovaries, amenorrhœa, painful menstruation, gout, rheumatism, diabetes, scrofulous deposits in glands, &c., obesity, eczema, scleroderma, &c., &c. This list may seem paradoxical. It is strange that such opposite conditions as chronic diarrhoea and constipation, anaemia and obesity can be cured by one and the same treatment. A study of the physiological and pathological principles which

govern these cases and their treatment will make this clearer later on.

Contra-indications.—Treatment by mineral waters in general and by Carlsbad in particular, is only suitable for chronic diseases, and should not be given during an acute attack or any rise of temperature. An attack of ague during the course should lead to its discontinuance for a day or two. The same rule should be observed after the occurrence of a chill. The following conditions render a course of Carlsbad absolutely inadmissible, and sudden death may ensue should such patients be so ill-advised as to attempt it:—

1. Valvular disease of the heart.
2. Degenerative affections of the great blood-vessels (such as atheroma).
3. Advanced* malarial degeneration of the heart.
4. Advanced Bright's disease of the kidneys; the earlier stages of renal disease can be treated with safety.†
5. Any disease of the brain, spinal cord, or nervous system, chorea (St. Vitus' dance) excepted.
6. Malignant tumours and degenerations. Cancer of any variety.
7. Advanced syphilitic disease. A slight attack of syphilis from which the patient has recovered does not prohibit a subsequent course of Carlsbad.

* I have seen two cases of death in natives, simply from a large dose of Epsom Salts. The *post-mortem* examinations revealed advanced malarial degeneration of the heart.

† It would perhaps be more accurate to say that the interval after the initial acute attack, is the time for treatment. All the fatal cases of Bright's disease I have seen in India, have had histories of previous attacks. The only hope for such cases is early resort to Carlsbad, Vichy or Neuenahr.

Having satisfied yourself that none of the above contra-indications obtain in your case, and that it is otherwise necessary to you, you are now ready to start upon the course.

Methods of conducting artificial course.—Procure either (1, **First Method**), two dozen bottles of the Carlsbad Sprudel Water, or (2, **Second Method**), two bottles of Carlsbad salt (powdery form, not crystals). Both these can be obtained from most of the leading chemists in this country. The former is the simpler but slightly the more expensive. The latter is better suited for travelling.

(I) *First Method*.—If you get the bottled water insert the bottle in a tin of tepid water and heat over the fire until it warms up to a temperature of about 120°F. This will be known by the water in the tin getting too hot to put a finger in. Pour out 6 ounces, three sherry glassfuls, into a cup, and drink slowly the first thing in the morning, fasting. Continue dressing for 20 minutes, and then take another 6 ounces. After a lapse of another 20 minutes take a third 6 ounces. Then, go out, take a short walk for about an hour, and on return have a simple breakfast of two soft boiled eggs, one breakfast cup of tea or cocoa, and three or four slices of dry toast, made in a particular way and called on the Continent Zwiebach (twice baked). Any native servant can make a fair imitation of it as follows: Cut three or four slices of bread, put them into a *thandur* or native oven, such as everyone has in his cook-house, heat this up until the bread becomes of an uniform yellow or pale brown tint, *all through its entire thickness*, and gets so very brittle that it breaks almost when you touch it

By this process the starch of the bread is converted almost wholly into a new compound called dextrine. This change in a somewhat modified form would have to be carried out by your digestive organs, if you ate the bread. By preparing it in this way *outside the body*, the assimilating organs are relieved of half the work they would normally have had in digesting it. This shows in a simple and intelligible form one method of applying the great **physiological principle of rest** to enfeebled digestive organs. Rest of the circulatory, respiratory, digestive and mental organs can never be complete. Partial, very partial, rest is all we can give them. When man or horse is tired, the remedy is rest, and the same applies to the various organs of these animals. Without rest, repair and recovery cannot be accomplished. The methods of giving the digestive organs rest are :—

1. To give artificially or pre-digested foods.
2. To avoid over-loading them with excess of food or drink.
3. To use only foods which are easy of digestion.

Relative digestibility of foods.—Fish,* fowl and game are more easily digested than beef or mutton. Of the two latter beef is the more difficult of digestion. Veal and pork are extremely indigestible. Liver and sweetbread done on a gridiron† are highly recommended. Brains are easy of digestion, but not very nutritious. Kidneys are to be avoided. Fatty or greasy dishes such as pâté de foie gras, curries,

* Dried and smoked fish such as kippers and bloaters are very indigestible. So are mackerel and salmon.

† Friedlieb, Dr. "On Homburg von der Höhe as a watering place," pages 82-3.

marrow, sausages, suet dumplings, plum-pudding ought to be avoided by Anglo-Indians. The digestion and absorption of fats especially embarrass the liver, give rise to the condition known as biliaryness, and lead to bile entering the stomach, when biliary vomiting often supervenes.

Fothergill ("Gout," p. 186) states that the flesh of crustaceans is particularly easy of digestion, and highly recommends fresh lobster salad. Friedlieb* does not agree with him on this point, and forbids crustaceans especially to any one going through a course of treatment by mineral waters.

The danger in eating the flesh of crustaceans lies in the readiness with which it decomposes and the especially poisonous nature of the decomposition products. If quite fresh it ought not to be indigestible. The entire question is one of individual peculiarity; some cannot tolerate shell fish under any circumstances. Be guided by your gastronomic capabilities (if you know them), but when in any doubt, refrain.

Fothergill wrote his charming book on the "Physiological Factor in Diagnosis" to prove that his own symptoms were not mortal and then finally died of them.

(2) *Second Method.*—An almost exact imitation of the natural Carlsbad water can be made by dissolving 53 grs.† of the '*powdery*' Carlsbad salt in 1 pint of

* Friedlieb, Dr. "On Homburg von der Höhe as a watering-place," pages 82-3.

† A number of 53 gr. powders should be weighed out, papered up, and kept ready. Also a tin pint measure, costing a few aunas, procured from the bazaar.

boiling water. This can be drunk when sufficiently cool* in three $6\frac{1}{2}$ ounce doses at intervals of 20 minutes as already described. It is desirable that in the majority of cases, the water should have a slightly aperient effect. If the above doses do not effect this, a teaspoonful or more of the salt should be added to the first dose until at least one liquid motion results soon after or before breakfast. Mr. Ernest Hart† considers the natural Carlsbad water an excellent astringent. In many it has no aperient effect until supplemented by addition of the salt. A glass of the water (natural or artificial) drunk *cold*, the first thing in the morning often acts aperiently where the warm water fails. It is an important therapeutic fact that the colder the water, the more aperient is its action. Many patients are ordered to have an extra glass, 6 ounces, at 11 A.M., and another on going to bed at night. I have seen the nocturnal glass produce the very best results in chronic dysentery and other tropical affections, and would advise all patients to take it.

Effects of the water.—Under the action of the waters the motions become dark-brown, almost of the consistence of tar and very offensive. They often look almost like pure bile, and this is ascribed to the eliminative and solvent action of the sulphate and

* It will be even better to dissolve the salt in about 16 ounces of boiling water. When it cools down add one or two glasses of soda-water and mix before drinking. This ensures carbonic acid being present, makes the water more palatable, efficient and stimulating to the stomach. So prepared it is an almost exact imitation of the natural water.

† *British Medical Journal* : Foreign Correspondence : Letters from Carlsbad. The date I am unable to trace.

carbonate of soda on the liver and its secretions. Within the first few days, after commencing the course, the patient feels a sense of lightness, loses the feeling of tension and weight about the liver, stomach, and waist, and begins to have a keen appetite. The tongue clears, the eyes lose their heavy and yellow look, the whole complexion brightens and begins to change from the grey Indian look, so characteristic of catarrhal dyspepsia, to a healthier tint.

The hot Carlsbad water at first stimulates the heart and dilates the arteries leading to an increased flow of urine.* Later the slightly depressent influence of the sodic salts manifests itself by slower and feebler circulation, sense of chilliness, slight loss of memory, slight giddiness, singing in the ears, perhaps nausea, and by all the usual symptoms of cerebral anaemia. These are only temporary symptoms and need cause no alarm. Patients with naturally feeble circulation and weak hearts should take some red wine (Carlowitz or Sauvignon, Australian claret), or weak whisky and water with luncheon and dinner to prevent these symptoms becoming greater or giving rise to inconvenience.

The late manifestation of the full beneficial effects of the water is remarkable. It often does not appear for two or three months after the cessation of the course. Then it manifests itself by an unusually vigorous state of health and digestion, the patient feeling better than he has done for years. I have heard at Carlsbad, several elderly gentlemen, who came there yearly, agree as to how much the

* The secretion of urine is directly dependent on blood pressure.

course steadied and improved their shooting and enabled them to take more exercise than they ever dreamt they could again. Such results are most likely to be attained when the patient takes what is known as a *nachcur* or **after-cure**. This consists of either a short course of the waters of Homburg or other saline springs, or of a walking tour in the Swiss or Scotch Highlands. Common salt is the great vitalizer of the animal system. It imparts tone, vigour, energy, and increases the vitality generally. Hence the use of springs, like Homburg, containing it. Many persons on the conclusion of either a natural or artificial course say : "Oh ! I feel just the same. It hasn't done me any good." These individuals judge prematurely ; they should wait for some months before any final opinion can be expressed. There are, of course, cases with which Carlsbad fails, but a great many of these are individuals who, in spite of the directions of their physician, eat, drink, and do whatever they like—who pooh-pooh the whole system of dietary and restrictions laid down on sound scientific principles as nonsense. Verily, they have their reward.

The after-cure is conducted on the Continent by sending the patient to Homburg for a short course of saline waters, or for a walking tour in the Bernese Oberland. Salt is the great invigorator and reviver of the system after the somewhat depressing effects of the alkaline waters. It stimulates and revives the patient, giving tone, vigour and energy. It is the remedy for atonic dyspepsia whenever this occurs from over-use of Carlsbad. These methods may be best imitated in India as follows: Get a bottle of

Homburg salts (Treacher & Co. supply it): take one or two (start with one only) teaspoonfuls in 8 ounces of tepid water, fasting, every morning for ten to fourteen days. Start at the same time on a month's walking tour in the hills or Kashmir, taking care not to walk more than 6 or 8 miles daily for the first week. Avoid the forbidden articles, but increase the quantities of the food allowed in the Carlsbad dietary. After a month of this you will feel in most marvellous health and spirits. Want of means or shortness of leave may prevent this being carried out, but only those who go through it can fully appreciate the wonderful good it effects.

Precautions to be observed during artificial course.—Carlsbad is a powerful remedy. If not used rightly, it can effect great mischief. An idea prevails that it is *very* depressing and very reducing. This, like so many other popular impressions, is a wrong one. It is true that you cannot drink salines and alkalies daily for three weeks without a slight amount of depression resulting. The three weeks Carlsbad course does not depress one to one-twentieth the extent that three weeks of the hot weather in the plains would. Hear what that famous authority Dr. Julius Braun in his work on "Balneotherapyapeutics" says regarding the "Furcht von Carlsbad" (the 'dread of Carlsbad,') p. 375: "I must add a few words regarding the popular error that a course of Carlsbad is always a 'violent measure.' It might, on the contrary, be maintained that where such a course is judiciously planned and well managed, it is the *mildest* measure which can be adopted amongst the different *effective* plans of treatment which can be

taken into consideration. The pretty general belief that purging and lowering and starving are required is quite erroneous: it is even almost always a serious mistake to push the waters to produce diarrhoea: but a restricted though nourishing diet, moderate but not fatiguing exercise, mental quietude and rest after the termination of the course are essential. It is not to be wondered at if a course of Carlsbad proves injurious under the following circumstances, which constantly occur with numerous variations. A man works hard up to the last moment before leaving London: ill as he is, to save time, he travels, in the heat of summer, in two or three days, the long distance to Carlsbad; in spite of his fatigued state he begins his course at once, pushes it on, drinks often one or two glasses more than the doctor tells him, 'because there is not sufficient effect' and because he must make the most of his time; he then hastens back, as fast as he came, for 'his partner leaves for his holiday,' and on arriving in town the 'renewed man' wants to do the work of two or three, but he finds it very difficult and 'Carlsbad was a mistake.'"

This is a country where, considering the climate, overwork on the part of civilians is rather the rule than the exception, and there is a decided tendency to "rush" when on short leave. Carlsbad cannot be rushed. It will do no good if not taken quietly. Better have only fourteen days' course than try unduly to hurry the three weeks' course.

Caution.—If the salt is taken in too large doses or continued for too long a period, atony of the stomach and atonic dyspepsia may result. This condition so induced is extremely difficult of cure. Experience

has taught me that the best way to regulate the course in India is to start the patient on it for ten days,—discontinue it for from four days to a week,* and then resume for eleven days more. The dietary should be strictly maintained in the interim. In this way all risk of producing atony is avoided. The difference between the Indian and European climates renders this slight difference in the method of carrying out the course necessary.

Season for and duration of course.—Carlsbad succeeds best at a time of the year when the skin acts well. It should not, however, be taken during the height of the hot season in the plains, as it is then most liable to produce atony of the stomach. October or November and, in the cooler parts of India, March and April are good months in the plains. In the hills it can be taken all through the hot season, but in some cases it would be better not to do so during the most relaxing portions of the rains. Even in the plains in the hot weather it can be taken for from three or four days to a week for liver, slight dysenteric attacks, &c. I have often been able to abort attacks of boils by a few days administration of this treatment during the hot weather. The course can be carried out at your own house, and will not interfere to any material extent with office duties.

Any one who can get leave should, however, do so; as without change of scene and air, and rest from work, full benefit cannot be derived. If leave cannot be had, the course might coincide with a tour of district work. Early parades or morning duties render it impracticable. Tent-life in the hills or Kashmir in

* According to the patient's strength.

spring or autumn near a good water-supply is my idea of the best time and place ; but *chacun à son goût* —a hill station hotel or club might suit the tastes of many. If the latter *the patient must endeavour to imitate the conditions of the real course described in Chapter II.* He should avoid dining or lunching out *in toto*, — also going to dances or staying up late at night. He should endeavour to, as far as possible, adopt a new routine of daily life, especially as regards being ‘early to bed and early to rise,’ in order to give time for his early morning walk. Remember to *limit the amount of food taken*, and smoking—to one cheroot or one pipe after meals *only*, twice, or at most thrice, a day. If tent-life is selected, a warm sheltered valley should be sought for to camp in. The camp can be kept there all the time or shifted by short marches occasionally. There is no objection to doing short marches (daily) all through the course, if they are either ridden or do not exceed six or eight miles. This should be considered the limit. No fatiguing marches, steep climbs in pursuit of game, or violent exercise are allowable. They might lead to straining of the valves of the heart, organic disease, and subsequent certain death. I have one such case now under treatment. Fishing, photography, sketching or painting on such a tour would be the most suitable forms of amusement. If you fear not having sufficient resources in yourself to provide against *ennui*, then, by all means, take a companion.

Restricted diet necessary.—Carlsbad is the best place for the course. There you find everyone following a certain routine course. You insensibly drop into the same course without effort. The restaurants

aid you by giving you the especial kinds of food which are most suitable.

Away from Carlsbad the case is different. It requires a very considerable amount of resolution, self-denial, quiet determination and watchfulness to control your tastes and appetites in such a manner as to thoroughly benefit, to the full, by the course. To be sporadically brave, generous or disinterested is easy. It is impulse—"the perfume and suppliance of a moment." To conquer and resist acquired tastes, to break down habit and custom, to control temper or even the faintest displays of irritation, to check the angry reply rising to the lips, in everyday domestic and public life, require a far higher heroism and devotion. If you wish to succeed with the Carlsbad course, you must be prepared *to mortify the flesh*, rule your tastes, appetites and habits, and in ruling yourself feel 'greater than he that taketh a city.' The Carlsbad doctors strictly interdict all excesses "in Venere aut Baccho."

The Carlsbad dietary, though slightly limited, is still highly nutritious, and more than enough for the needs of the body. Let me again impress upon you that the course without the limited dietary will effect but little good, and if you cannot make up your mind to submit to these limitations you had better not embark upon it.

In the chapter on the "Various Forms of Dyspepsia and their Treatment" will be found menus for the various meals. These should be studied and followed. Make your cook copy them out in the vernacular, and give them daily until he comes to the last. Then begin again, *da capo*, as on shipboard.

Chapter V.

ON THE INCOMPATIBILITY OF ACIDS WITH THE CARLSBAD TREATMENT.

Opinions of Julius Braun—Alkalies mostly absorbed as such.—Acids especially injure cases of catarrhal dyspepsia.—Fothergill's method of giving stewed fruits to the gouty, rheumatic and dyspeptic.

JULIUS BRAUN scoffs at the *prohibition of vegetable acids* and butter during a course of alkaline waters. He expresses himself as follows :—“ The theory on “ which it rests is as crude as it is false, and is opposed “ not merely to all physiological facts, but even to the “ most general experience, according to which vege-“ table acids, *unless special contra-indications exist*, in “ nowise interfere with the effect of alkaline waters. “ The carbonate of soda meets with acids in the “ gastric juices and in the small intestines which are “ far stronger than carbonic acid (lactic acid, acetic “ acid, &c.), and which at once decompose the carbo-“ nate of soda and transform it into other salts ; never-“ theless, we find it again in the blood and urine as “ carbonate, just as we meet with it in the ashes of “ the blood as the result of combustion. The alkaline “ salts of vegetable acids are, however, found just as “ much as carbonates in the blood and urine as the “ alkaline carbonates, if they are taken in abundance,*

* “ Curative Effects of Baths and Waters,” p. 29.

"because they undergo the same oxidation in the blood."

The salts of vegetable acids are certainly converted into carbonates in the blood and excreted as such in the urine. But is the same true with regard to the free vegetable acids themselves? When free vegetable acids are introduced into the stomach they irritate it. After being absorbed they most probably unite with the alkali of the blood and form salts which are then changed into carbonates and excreted in the usual way. *This change is carried out at the expense and sacrifice of the alkalinity of the blood. This is a most dangerous thing to tamper with, and in certain constitutions—the gouty and rheumatic—is almost certain to be followed by trouble.* Clinically we find that the acidity of the urine is increased by vegetable acids; and although this acidity is due to acid phosphates, I maintain that it can only occur at the expense of the alkalinity of the blood.

That *alkaline waters are not absorbed as alkalies*, but as neutral salts after being acted upon by the acid contents of the stomach, I also cannot believe to be universally the case in tropical patients. In the tropics the secretion of acid in the gastric juice falls to a minimum,—more especially in malarial cases. Often, both in hospital and private practice, I have seen such patients vomit milk which they had taken over an hour previously. It came up perfectly uncurdled,* shewing the complete absence of acid from

* All doctors are familiar with the remark of the anxious mother who tells you on arrival "Baby's stomach has been so sick; he brought up all his milk quite sour and curdled." This is how it ought to come up. If it re-appeared not sour and uncurdled it would then be a symptom of something seriously wrong.

their stomachs. In such cases the alkaline water *must* be absorbed purely in the condition of free alkali.

Alkalies mostly absorbed as such.—Even in non-tropical cases I cannot believe that the alkalies of alkaline waters are wholly converted into neutral salts. It is the common and incontrovertible result of clinical experience, that long continued courses of alkalies, thin, weaken and reduce patients.* It is equally acknowledged that courses of salt waters stimulate and improve patients, and that they do not lose weight under such treatment.† The acid of the gastric juice is hydrochloric acid,—lactic acid only appearing, according to Foster and Waller, as a secondary product of decomposition or fermentation. The sodic carbonate of Carlsbad water would be thus converted mainly into sodium chloride and a small portion possibly into sodium lactate and absorbed as such. But we have already seen that sodic chloride does not diminish body-weight and reduce patients whilst alkalies do. If Julius Braun's view is right, then no patient should ever be reduced or in any way lowered by alkaline treatment!! It consequently appears plain to me that the greater portion of the alkali in Carlsbad water is absorbed as such and that only small quantities are neutralised and converted into salts by the digestive acids.

Against this opinion it may be urged that the total secretion of gastric juice has been estimated to amount to seven litres per diem, and that the 0·2 per cent. of hydrochloric acid contained in this will more than

* "Curative Effects of Baths and Waters"—J. Braun, p. 323.

† Idem, p. 387.

neutralise all the alkali in the daily dose of Carlsbad. I reply that (1) the fasting stomach seldom contains more than a few ounces of gastric juice ; (2) that although the ingestion of alkalies produces a reflex flow * of acid gastric juice, yet Heidenhain has shown that the time for a reflex gastric secretion to occur is from 15 to 30 minutes, and that before it could take place a dose of hot alkaline water would be absorbed beyond the reach of neutralisation.

As the result then of clinical experience in the tropics and of physiological facts, I cannot agree with Julius Braun's opinion that vegetable acids are admissible during a course of alkaline waters. My reasons may be concisely summed up thus :—

1. Free vegetable acids irritate the stomach.
2. They tend to diminish the alkalinity of the blood and render the urine more acid. Possibly they may have the same effect on the blood.
3. I have often seen them in the tropics start rheumatic pains in muscles or joints or precipitate attacks of acute rheumatism or gout in those so predisposed.
4. They are highly injurious to the condition of catarrhal dyspepsia, so common in the tropics that very few are free from it. Anyone in tropical practice soon finds out that very few of his patients can tolerate either acids or iron.† Both these remedies are contra-indicated in this form of dyspepsia.

* Ringer's theory.

† Brigade-Surgeon-Lieutenant-Colonel Ross, I.M.S., Civil Surgeon, Rawal Pindi, whose acquirements and reputation as a physician are so widely known and appreciated, informed me that he had almost completely given up prescribing iron on this account.

Special method of stewing fruit.—It must not be inferred from these remarks that fruits and vegetable acids are to be wholly excluded from the dietary of those taking alkaline (Carlsbad, Vichy, Nenenahr, &c.,) waters. Far from it—they are highly recommended. But they should be freed from their excessive acidity by being stewed with bicarbonate of potash or soda in the proportion of 60 grains to one pound of fruit as recommended by Fothergill* for the consumption of gouty patients. The cook should taste the fruit whilst stewing. If a soapy taste is perceived, the alkali is in excess and more fruit must be added. Certain fruits (*e.g.*, gooseberries, plums, currants, &c.,) contain a great excess of acid and may need more than the above quantity of potash. By preparing fruit in this way the vegetable acids enter the blood in the form of salts and no attack is made on the alkalinity of that fluid. A lesser quantity of sugar is also required. A most fatal mistake dyspeptics make, is endeavouring to mask the acidity of dishes by an excessive addition of sugar. These salts of vegetable acids are highly essential to proper nutrition, and it would be a serious dietetic mistake to interdict fruits **in toto**. Fresh fruits must, however, always be taken stewed with potash. Most dried fruits, such as figs, prunes, apricots and dates, contain so little acid that no alkaline treatment is necessary. As for the acidity of wines, in any **sound** wine it is generally so small as to be of little consequence. The acidity of **good** claret varies from 2—4 grs. of tartaric acid per ounce only, and if it is mixed with

* “Gout in its Protean Aspects,” p. 207.

Gieshubler water, as is usually done at Carlsbad, any slight excess of acid will be neutralised. But this is by no means essential, and it may be taken neat.

As to the prohibition of butter and fats, these, if taken, would interfere with or embarrass the functions of the liver. Many livers are fattily infiltrated, and to abstain from fatty foods for three weeks, gives them time for recovery.

Chapter VI.

CHEMICAL CONSTITUTION OF THE CARLSBAD WATER AND SALT—THERAPEUTIC ACTIONS OF THESE CONSTITUENTS.

THE waters of the various Carlsbad springs have the same composition as far as solid ingredients are concerned. The only differences are in temperature and in the amount of free carbonic acid gas in solution. The cooler springs contain more gas.

The **Sprudel** is the principal spring, and its waters are bottled and exported in the greatest quantity. Its temperature is also the highest, being 162° F. The bottled water is clear, limpid, alkaline in reaction, of a specific gravity of 1.0053^* at a temperature of 18° C. A litre of it contains about 5.85 grammes of soluble saline ingredients. One English pint thus contains about 53 grs. of salt. In addition, every pint has dissolved in it 12 to 20 cubic inches of natural carbonic acid gas.†

When the Sprudel water is concentrated by evaporation most of its solid constituents are obtained

* Krause, Dr. J.—“Carlsbad: Its Thermal Springs and Baths,” London, 1887.

† I have had bottles of it all through the Punjab hot season. It kept solid at temperatures of over 100° F. In the very damp weather of the rains it only exhibited an incipient tendency to grow moist. I have not heard how it behaves in the extreme *damp* heat of lower India.

as a white crystalline solid which has the following composition* :—

| | | | | |
|--------------------------|-----|-------|---------|--------|
| Sulphate of sodium | ... | ... | ... | 37·695 |
| Carbonate of sodium | ... | ... | ... | 5·997 |
| Chloride of sodium | ... | ... | ... | 0·397 |
| Traces of other salts | ... | ... | ... | 0·391 |
| Water of crystallisation | ... | ... | ... | 55·520 |
| | | | | ————— |
| | | Total | 100·000 | ————— |

These **Sprudel salt crystals** are unsuitable for use in the tropics. Owing to the large amount of water of crystallisation they contain, they readily deliquesce in warm climates, and in their liquid form are inconvenient and unmanageable. Their taste is also disagreeable; the quantity of water of crystallisation taken up by the sulphate and carbonate of sodium is large. Each molecule of both these salts takes up ten molecules of water of crystallisation, as may be seen by their formulæ $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ and $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$. Professor Ludwig, of Vienna, recommended eliminating this excessive water by strongly heating the crystals and supercarbonating the carbonate by exposing it to the action of currents of carbon dioxide gas. It thus becomes converted into the *bi*-carbonate, a less hydrated salt, and not nearly so prone to absorb water (hygroscopic). The compound so produced is very superior to the older preparation. It keeps solid in the hottest climate†,

* "Chemische Untersuchung der Karlsbader Thermen" von Ludwig und Mauthner, p. 12, Wien, 1886.

† *Indian Medical Gazette*, March '91—"Carlsbad Treatment for Anglo-Indians" by Surgn.-Lt.-Col. Temple-Wright, M.D., p. 72.

and is more palatable. It has the following composition.*

The pulverised or powdery Carlsbad Salt (pulverförmig) :—

| | | | | | |
|---------------------|-----|-----|-----|-------|--------|
| Sodic sulphate | ... | ... | ... | ... | 43.25 |
| Sodic bicarbonate | ... | ... | ... | ... | 36.29 |
| Sodic chloride | ... | ... | ... | ... | 16.81 |
| Potassic sulphate | ... | ... | ... | ... | 3.06 |
| Lithium bicarbonate | ... | ... | ... | ... | 0.39 |
| Traces of others | ... | ... | ... | ... | 0.20 |
| | | | | Total | 100.00 |

An artificial water made with this salt merely differs from the natural water in having its carbon dioxide gas in a state of combination, whilst in the natural water it is present in the free state. This slight defect can be remedied by adding a little soda-water to the water in which you dissolve the salt.

The above analyses show that the main constituents of Carlsbad water are sodic sulphate, sodic carbonate, and sodic chloride—a combination of sodium compounds. Even the aphorism of the older physicians—"ammonia for the lungs, potash for the kidneys, and soda for the liver"—shews us that we must expect the main action of this combination to be on the liver.

I shall nevertheless briefly review the therapeutic actions of these salts and point out their physiological uses.

* The difference in these two analyses is explained as follows: The crystallised salt represents the solid constituents of the water minus the mother-liquor remaining after they separate out. The powdery salt is the total solids of the *entire* water evaporated to *complete* dryness, and re-carbonated.

1. **Sodic sulphate ($\text{Na}_2 \text{SO}_4 \cdot 10 \text{H}_2\text{O}$)** is a saline hydragogue cathartic or purgative, which has a special action on the liver, stimulating it to increased action. It stimulates the coats of the stomach and intestines to pour out a thin watery secretion which may amount to diarrhoea when the doses are large. It thus carries away water from the blood-vessels of the chylopoietic viscera, and relieves congestions of the liver and spleen by depleting the portal system indirectly. Magnesium sulphate acts in a similar way, but is devoid of the special action on the liver sodic sulphate has. Strong solutions of both these salts precipitate the globulin derivatives of blood and favour the coagulation of that fluid, so that it is extremely unlikely that either of them, in a mineral water, can have any effect in causing absorption of fibrinous exudations. Braun states that the effect of this salt on the intestines is mainly irritative, and that it is little absorbed. It decomposes in the alimentary canal in part into sulphuretted hydrogen which, acting on the small quantities of iron present in the Carlsbad water, is said to blacken the fæces, and into sodic sulphide.

2. **Sodic carbonate ($\text{Na}_2 \text{CO}_3 \cdot 10 \text{H}_2\text{O}$)** in the dilute form in which it exists in Carlsbad water is a diuretic and mild antacid. It emulsifies fats. On the presence in it of soda depends the alkalinity and fluidity of the blood. It exercises a solvent action on the albumen, fibrin and fibrin-factors of that fluid. A strong supposition exists that this solvent action of soda on fibrin is the normal method of change of substance (proteid) (Braun). Clinical experience shows that long-continued administration of this

salt depresses, thins and weakens the patient. Excess of soda leads to excessive tissue and other changes. It can dissolve recent inflammatory fibrinous exudations. It is the principal salt in the pancreatic juice of man, and that on which its alkalinity depends. It is the alkali and chief inorganic constituent of bile, and has a powerful solvent action on thickened bile and biliary concretions. When ingested it dissolves off old and worn-out epithelium from the mucous membranes: hence its great use in catarrhal dyspepsia. The inorganic basis of the fluid portion (serum) of the blood is soda, that of the solid portion (corpuscle) is potash. "Soda is the alkali, the presence of which is most important in the human system." Soda is the fluidifier of the blood."*

3. Sodic chloride (NaCl) in large doses is an emetic, a cholagogue and hydragogue purgative. In small doses it unquestionably supplies the stomach with material for the manufacture of gastric juice. It aids and stimulates the digestion not alone of nitrogenous but also of *starchy* foods. It excites rapid absorption and peristalsis. It is always present in constant proportion in the fluids and tissues of the human body, and is necessary in the former for the solution of their proteid constituents, more especially of the members of the globulin family. Wherever active cell formation is proceeding, there we find abundant sodic chloride, *e.g.*, in pus, synovia, grey hepatization of the lungs (Braun). In fluid exudations not accompanied by cell proliferation we also find it, as in ascitic fluid. With urea, that ultimate product of

* Macpherson's "Baths and Wells of Europe."

proteid metabolism, we find it associated so intimately, that many physiological chemists regard them as forming a definite chemical compound. The greater the amount of sodic chloride in the blood, the larger is the amount of urea excreted in the urine. Hence the use of this salt in cases of albuminuria where the excretion of urea is diminished. The quantity of salt in the blood is maintained at a constant strength, any excess being eliminated in the urine. The body retains no great reserve of salt as it does of glycogen. The osmosis and endosmosis between the blood and tissues is mainly dependent on the presence of sodic chloride. Waters containing salt are therefore indicated (1) to stimulate and increase absorption and nutrition ; (2) to increase and complete elimination of effete matters (*i.e.*, proteid metabolism) : hence their great use in gout in which the metabolic changes, instead of being conducted as far as the formation of urea, stop short at the stage of uric acid ; (3) to rouse the vital functions of the liver and stomach: hence salt is the great remedy for atonic dyspepsia (the dose to produce these effects varies from 60 grs. to 300 grs. daily in 6 ozs. of water) ; (4), in scrofulous enlargements of glands and scrofulous cachexiæ generally salt waters stand unrivalled. Such patients are, however, usually sent to more purely salt springs than Carlsbad: such as Homburg, Wiesbaden, Kreuznach, Woodhall, &c.

Action of the Carlsbad water. I, General.—

I. *On the alimentary canal.*—The effect on the alimentary canal may be judged of from that of a bath of the Sprudel water on the skin. This it whitens, smooths, softens and rejuvenates, making

it like that of a young child. The old intestinal epithelium is softened and gradually dissolved away exposing a newer and healthier layer beneath. A tongue (whose owner has never seen it clean and free from thick fur for years) is found clean and red, even in the morning. The sodic sulphate produces a slight though beneficial irritation and stimulation of the mucous membrane leading to a flow of water from the tissues, and is itself little absorbed, according to Braun. This relieves congestion of all the abdominal viscera, more especially of the liver and spleen, reducing them in size. It increases peristalsis, and gentle purgation follows.

2. *On the liver.*—Soda being the great biliary solvent, it eliminates old and thickened bile, and clears the minute bile ducts and vessels. Congestion is relieved. The pathological results of this are : increased functional activity, leading to secretion of bile of better quality and quantity, more perfect and complete digestion of nitrogenous foods (improved proteid metabolism) and removal of the tendency to formation of increased fibrous tissue. Even early deposits of fibrous tissue are said to be removed.

3. *On the mesenteric glands and lacteals.*—Old indurations and thickenings are softened, dissolved and removed—presumably by the sodic carbonate. This permits of free movement of the lymph and chyle. We thus often find that persons remarkable for spare and lean figures, after a Carlsbad course fill out, become well nourished and plump. The functions of absorption and elimination are improved and invigorated. As a result the blood becomes purer and nutrition improves.

4. *Genito-urinary system.*—Urine is copiously evacuated, owing to the increased blood-pressure caused by ingestion of the hot water. This carries away effete and harmful materials which had previously been lurking in the system. The urine voided is richer in epithelial *débris*, and this must be the result of a clearing of the lumen of the urinary tubules and passages. Congestive affections of the ovaries and uterus are relieved,—menstruation, which was previously scanty or suppressed, making its appearance in normal amount. Recent inflammatory exudations around womb, ovaries and peritoneum are said to be dissolved and removed. Those disordered constitutional conditions which lead to the formation of calculi in the kidneys and bladder are removed or ameliorated. The sexual appetite is reduced. For leucorrhœa and other female complaints the injection of the hot Sprudel or artificial water, after Emmet's method produces the best results.

5. *The circulatory system* is stimulated by the warm water, but later on the power of the heart is slightly lowered by the depressing effect of the free alkali. This leads to slight giddiness, nausea, noises in the ears, faintness, slight* loss of memory, drowsiness, and the usual symptoms of a diminished supply of blood to the brain. The falling-off in the heart's power may possibly also be due in part to the diminution in the peripheral resistance caused by the action of the waters in freeing out the portal circulation.

* Native patients suffer most from loss of memory during the course. They should be warned of it beforehand or they may get alarmed.

6. *The respiratory system.*—Breathing is always relieved by a diminution of portal congestion and removal of abdominal fat. It is slightly accelerated by drinking the hot water.

7. *Tegumentary system.*—As a result of impaired nutrition, the skin of malarial cases is often hard and dry, and the hair falls out. Carlsbad causes increased action of the skin by the action both of the water and baths ; it grows soft and moist, and hair begins to grow again. Irritative skin diseases such as eczema are soothed and disappear. Scleroderma is also benefited.

8. *Nervous system.*—The alkali soothes the nervous system, calming it and diminishing reflex action. *Neuralgias* being the “*prayer of a nerve for healthy blood*” as Romberg asserts, are often much relieved or cured by the blood-purifying effect of the water. After the course is concluded, the operations of the intellect are rendered clearer and quicker owing to the blood having been freed from the stupefying and yet irritating products of imperfect digestion previously circulating in it.

To concisely sum up—all the organs of the body concerned in the digestion of food, in the elimination of waste products and in the purification of the blood are brought into a healthy state and do their work more efficiently, congestions are removed, and the results of recent inflammations dissipated.

The special action of Carlsbad will be dealt with when treating of the various affections in which it is specially efficacious.

Chapter VII.

TROPICAL DISEASES FOR WHICH CARLSBAD IS SPECIALLY SUITABLE—ITS SPECIAL ACTION.

I.—Malaria—Its nature and effects on the system.—

Causes, congestion of internal organs, liver, spleen, kidneys—enlarged spleen—chronic intestinal catarrh—uterine and ovarian congestion. Hot climates, also congest internal organs—malarial or tropical cirrhosis—malarial degeneration of the heart—ankylostomiasis—sudden death from pulmonary thrombosis—malarial neuralgia—malarial affections of the skin—ulcers—oriental sores—tropical anaemia—malarial rheumatism.

HAVING dealt with the general action of Carlsbad on the system, I shall now endeavour to particularise its effects on the various tropical affections for which it is considered most suitable.

It will be necessary for me to very briefly point out the nature of malaria, how it affects the internal organs, how it and a hot climate together undermine and break down the constitution, and how these results may be either averted or remedied, wholly or partially.

Malaria—its nature and effects.—Malaria is produced by microscopic organisms, of the nature of protozoa, which develop, mature and multiply in the

red corpuscles of the blood, leading to their ultimate destruction. Other organisms infest the serum also. The growth of these parasites is accompanied by a development of dark pigment. Nature fights against these parasites by sending hosts of leucocytes (white blood corpuscles) and macrophages which surround the malarial organisms and eat them up, becoming pigmented themselves in the process. These leucocytes afterwards probably suffer diapedesis, stick in the *rete mucosum* of the malpighian layer of the skin and give to malarial patients that dusky pallor, people in England term "the grey Indian look."

The latest researches on the subject, those of Surgeon-Captain F. Evans, I.M.S., one of my distinguished successors in the chair of Chemistry in the Medical College, Lahore, tend to establish that there are still other organisms of the nature of fungi or algæ concerned in the production of certain Indian fevers.

Congests the Internal Organs, Liver, Spleen, Kidneys.—Malaria, and especially attacks of malarial fever, cause congestion of almost all the organs in the body. Owing to their great vascularity the liver and spleen suffer greatly, become darkly congested and often enlarged. The kidneys, stomach, bowels, uterus and ovaries and bladder are similarly congested to varying degrees. On several occasions I have seen the kidneys so much congested as to give rise to acute inflammation (acute Bright's disease) with all the usual symptoms of smoky and bloody urine and albuminuria. Such acute attacks often result in the insidious onset of chronic Bright's disease. The acute attack of kidney inflammation apparently gets quite well. The patient resumes his

wonted occupation. After some time he notices he is pale, delicate, languid, weak, his eyesight is failing, he has headaches and nausea. Should the actual condition not be early diagnosed and treated, some months or perhaps some years later apoplexy or uræmia—a very rapid form of blood-poisoning—supervenes and puts an end to life within 24 hours.

Fatty and large white kidneys are also common in malarial patients.

Illustrative Cases, I.—*Chronic Bright's Disease unsuspected—Death.*—Mrs. A. B., æt. about 45, came from the plains stating she was feeling weak and merely asked for a tonic. Enquiry elicited that her sight was failing ($V = \frac{6}{24}$), that her face was puffy on getting up in the morning, that she had had kidney trouble after continued fever four years previously.

Ophthalmoscopic examination revealed small white patches and haemorrhages in both retinæ with advanced optic neuritis.

The urine contained one-third of albumen and only one per cent. of urea. Her husband was informed of her grave condition, that nothing could cure her, and that the end might occur at any time. It occurred about 10 days later, suddenly, from urumia. This illustrates the insidious nature of such cases.

Case II.—*Acute Bright's Disease—Recovery.*—Mr. C. D. contracted a sharp attack of malarial fever, on return from shooting amongst the lower hills. Smoky and bloody urine appeared on fourth day. He continued in a very critical condition, notwithstanding vigorous treatment and frequent wet hot packing, for about 14 days. He made a slow but good recovery, and now, three years later, is alive and in perfect health. Knowing his liability to a return of the malady he takes great care of himself and gets his urine chemically and microscopically examined every few months.

The ordinary malarially **enlarged spleen** is the purest instance of the congestive effect of malaria on an organ. It is easily felt under the arch of the ribs on the left side—when the patient lies on his back and

draws up his knees--as a hard mass. If neglected, it terminates in anæmia, dropsy and death after years of feeble health.

Distinctly curable up to about nine months, or a year's duration, in its later stages, after chronic cirrhotic changes have occurred it is as distinctly incurable.

Treatment.—Spleen is easily cured by Carlsbad, Vichy or Marienbad, tonics, iron, salines, hot salt water baths and the external application of strong iodine liniment, red iodide of mercury ointment or electricity* over the enlarged organ.

The general health should be carefully kept up to par by nutritious diet, good Burgundy, and above all a thoroughly open-air life, in a warm (*not hot*) sunny climate—Kashmir, the South of France or Australia. Extreme cold is very injurious and may induce the form of sudden death alluded to later on. Spleen cases should never be permitted to go on field service or undertake any duty entailing hardship, exposure or over-fatigue—they are certain to break down under it.

Chronic Catarrh of Stomach and Intestines—Manifests its presence at an early stage by the thickly furred tongue known as the Indian or tropical tongue,† by frequent and irregular attacks of diarrhœa and of slight jaundice with heavy, muddy,

* Electricity should be applied as slowly interrupted induced currents (faradisation). This I believe to be the most efficacious of all local treatments.

† The very thick furring of the tropical tongue will be realized from the following :—An officer on sick leave consulted an Irish doctor in Melbourne, who, on seeing his tongue, exclaimed, “My dear Sir, you have a tongue on which you could sow potatoes!” The description is clinically an excellent one.

yellow eyes and pale whitish motions. A deep-seated tenderness is often felt in the abdomen—due to patches of enlarged vessels and localised chronic inflammation in the bowels. Appetite after fever is generally conspicuously absent unless the stomach is the seat of enlargement and dilatation. The latter often results from the large quantities of fluids we drink with meals in the hot weather and gives rise to excessive appetite. The congested intestinal patches leave behind on recovery areas of pigmentary degeneration. The entire digestive functions lose power and vigour under the action of malaria and a hot climate. The secreting glands, more especially those of the stomach, waste and degenerate, and on this account even the most nutritious diet often fails to benefit a malarial patient.

Treatment.—There is only one class of remedies suitable for such cases—alkalies. The best form in which to administer them is Carlsbad. The natural water in small doses (3 to 6 ounces to start with) taken slowly and at a lower temperature, *i.e.*, about 70°F., night, noon and morning, will be found most efficacious. Catarrhal cases need a longer course of treatment—four or five weeks. The water is given colder to prevent its too rapid absorption and to ensure its staying as long as possible in contact with the lining membranes of the digestive tract—where it dissolves off the old unhealthy epithelium, whilst a new and healthy layer springs up from below it to take its place. In this condition acids are most injurious, and should on no account be permitted either as fruits, sauces or drinks, mild stewed fruits prepared as directed in Chapter V should be given.

A few weeks' treatment makes a most marvellous change in the patient--his eyes and complexion clear, his appetite increases, despondency vanishes, and he begins again to feel a pleasure in existence.

Uterine and Ovarian Congestion.—Almost every woman feels pain and tenderness in the womb, ovaries, and back during an attack of fever. This is due to congestion resulting from malaria and the high temperature. Continued attacks of fever cause enlargement and chronic congestion of the womb. I have many times found the womb enlarged to one or more inches above the normal size, in (European) women suffering from malarial fevers. The lining membrane of this organ also becomes the seat of chronic inflammation (endometritis)—leading to excessive loss of blood at each menstrual period. This affection requires local as well as constitutional treatment to cure it. Congestive enlargements of the womb are the usual causes of uterine displacements.

Neuralgic and inflammatory affections of the ovaries are also frequently the results of fever.

Hot climates also congest Internal Organs.—Not alone has malaria and tropical fever a marked effect in causing congestion of the internal organs but even a hot climate has of itself the same effect. This effect is produced as follows:—When we perspire freely under the influence of heat, our skin grows cold, as the perspiration evaporates from it. This cold causes a contraction of the cutaneous vessels and drives the blood in upon the internal organs. This correlation between the vascular conditions of the skin and the internal organs should never be lost sight of.

A malarial patient to a certain extent resembles an animal in which the splanchnic nerves have been divided, producing vaso-motor paralysis of the abdominal viscera.

In the tropics, then, our internal organs are generally water-logged, as it were, by the presence in them of an unusual amount of blood.

In a cold climate the muscular walls of the blood-vessels are contracted by the bracing effect of cold and so help to drive on the blood within them.

In a hot climate, on the other hand, the muscular walls of the blood-vessels share the general relaxation experienced by our skeletal (of legs, arms, body, &c.,) muscles, and thus allow blood to accumulate and stagnate in the various internal organs.

When an organ has too much blood stagnating in it, and has not a sufficient supply of fresh blood continually being pumped through it by the circulation, it is deprived of its proper nutriment—its vitality and energy sink—it does its work imperfectly—it has little power of resistance to any adverse influences which attack it.

On an organ so water-logged and sodden with stagnating blood, a chill readily acts producing congestion or inflammation. The liver from its great vascularity is most readily attacked. It is rare at an Indian autopsy to see a liver which is not more or less congested.

Malarial or Tropical Cirrhosis.—It is a well-known rule in pathology that when an organ remains chronically congested for a considerable time, a permanent increase or proliferation of its framework (fibrous) tissue results. This, concomitantly with the

chronic passive congestion, gives rise to enlargement of the organ and would better deserve the name of *hypo-trophic* than that of *hyper-trophic* cirrhosis. The tendency of this newly-formed tissue is to contract and harden like the scar of a burn, and when this occurs we have **true cirrhosis**.

Case III—Mr. E. P., who served for many years in Assam, consulted me, complaining of low fever, enlargement and excessive pain in the liver. The ureameter showed him to excrete only 0·5 per cent. of urea. Thinking he had an abscess, under chloroform, I inserted hollow aspirating needles into his liver in eight different places. No pus was found but the needles, instead of quietly passing in through soft, normal, liver tissue, grated on hard and resilient masses as tough as india-rubber. It was an incurable case of malarial cirrhosis with perihepatitis. Strong doses of sodium sulphate and alkalies gave him considerable relief from pain and constipation. Aspiration invariably gives such cases the greatest ease and comfort by local abstraction of blood.

If taken in the early stages within six or nine months, this affection is curable, but later on—when the contracting fibrous tissue occludes the vessels and dropsy often supervenes—nothing can be done save to relieve the patient temporarily by frequently tapping the abdominal cavity. Malarial cirrhosis rarely runs on to dropsy in European cases, but it very commonly does so in Natives.

Malarial Degeneration of the Heart.—In advanced malarial cases the heart is found small, pale, thin, and weak—the ventricular walls being reduced to less than one-half their normal thickness.

The muscular tissue of the heart is atrophied and fattily degenerated.

The circulation of such patients is very feeble—they feel cold greatly—are subject to headaches, giddiness,

loss of memory, noises in the ears, nausea, vomiting, faintness and shortness of breath.

Treatment.—These cases have a very feeble hold on life. I have seen two die from an ordinary dose of Epsom salts, and many die from exposure to cold. For such **extreme** cases Carlsbad treatment is wholly inadmissible, and would probably prove rapidly fatal.

The **milder** forms of this affection, which I believe to be distinctly curable, are best treated by an immediate removal from exposure to malarial influences, *i.e.*, out of India—to a climate which is not too cold, such as the South of France or Australia. On the voyage they should have hot salt water baths, digitalis and iron. Whilst in the hot salt water bath, electricity should be applied over the spleen and liver for about 5 to 10 minutes daily, in the form of slowly interrupted induced currents. After convalescence has properly set in a very mild course of Carlsbad might be cautiously ventured upon, beginning with a single dose of only 4 oz. of the natural water, warmed to about 110°F., every morning and gradual increasing the dose according to its effects. The patient should have a cup of hot tea or soup before taking his daily hot salt water bath.

A similar condition of the heart is observed in **ankylostomiasis**. Ankylostomiasis is a disease of tropical and sub-tropical countries characterised by progressive anaemia, cardiac weakness, debility, loss of energy, dyspepsia, pain in the pit of the stomach, &c. It is due to the presence in the upper part of the small intestine of numerous small worms, about half an inch long, named **ankylostomata duodenales**.

The presence of these worms can only be with certainty determined by the microscopic examination of the motions by an experienced observer, trained to recognise their ova. This disease occurs much more frequently than is generally supposed, and all cases of obstinate anaemia supposed to be malarial should have their motions microscopically examined with a view to determining its presence.

Sudden Death in Malarial Cases—often results from clotting of blood in the great vessels, more especially in the pulmonary artery. This subject has recently been ably treated by Sir Joseph Fayrer, K.C.S.I., in a paper in the *British Medical Journal* for September 23rd, 1893.

The sudden deaths of many Anglo-Indians within a very short time after retirement to the cold winters of Britain, are doubtless often due to this cause.

Malarial Neuralgia—most frequent as “brow-ague”—is a painful affection. I have found 5-8 grain doses of exalgin the most efficacious of all drugs in relieving it. Tonga is also useful. Simple change of air often succeeds better than anything else and effects a cure at once. Croton-chloral has, in my hands, been invariably useless. Quinine is uncertain in its results. Sciatica is also of frequent occurrence.

Malarial affections of the Skin and epidermal appendages. The skin often becomes dry, hard and scaly or brawny or glazed and shining. Both these conditions indicate mal-nutrition from lowering of the constitution and weakness of the circulation. The hair falls out and premature baldness ensues.

The hair which remains is dry, hard, thin and staring. The nails dry and become very brittle.

Malarial Ulcers in Mouth.—Small ulcers frequently form inside the mouth on the gums, tongue and inside the cheeks. These may be mistaken for syphilis, but are distinguished by their healing up without the loss of epithelium so characteristic of that disease, as well as by the history of the case.

Oriental Sores must be regarded as the manifestations of peculiar varieties of malaria. They enjoy a number of local names, *e.g.*, Delhi boil, Frontier or Lahore sores, &c. They begin as dusky red subcutaneous swellings, which continue increasing in size until they break down and become most intractable ulcers requiring change of climate and months of treatment to heal them. Liq. ferri pernitratis fortior is almost a specific in their treatment; but it is often necessary to chloroform the patient and scrape them out from the bottom with a Volkmann's spoon, and then to apply nitric acid, zinc chloride or other strong caustic. This may have to be repeated several times at intervals of a few weeks before they will heal properly. At the same time the general health must be attended to, and iron, quinine and arsenic given internally for a month or two.

Malarial Anæmia or Tropical Cachexia affects mostly residents in the damper parts of India where the cold season is either very short or is only nominally and euphemistically so-called. It is due to the perversion of nutrition consequent on the chronic congestive changes of the internal organs and intestinal catarrh described above.

Treatment.—About three years' residence in a good climate with three annual courses of Carlsbad will remove it in young and healthy subjects. In the weak, debilitated or aged, it is frequently incurable. It is often associated with great bodily and mental activity. Many retired officers, who have for several decades been drawing handsome pensions, may be seen in London Clubs, Cheltenham, Bedford and elsewhere with ghastly anaemic faces, marking them as the subjects of tropical anaemia but apparently enjoying life in the sad and sober manner for which we Anglo-Indians are so famous, just the same as before.

Malarial Rheumatism.—There is a form of muscular rheumatism occurring in the tropics which gets well on simply giving moderate doses of quinine and salines for a few days.

The ordinary form of muscular rheumatism is very prevalent in the damper and more malarial parts of India, such as Lower Bengal, Assam and Burmah. This form is most amenable to Carlsbad treatment—a few days of which often banishes it. The course should, however, at the earliest opportunity, be *carried out fully*, in order to get rid of the tendency of the constitution to produce these rheumatic attacks. It should be supplemented too by hot salt electric baths with local faradization over the liver for from 5 to 10 minutes daily. Iodine liniment should be painted over the affected muscles and over the liver. Sweets, sugar, greasy dishes, acids and fresh fruits should be rigidly avoided. Flannel should be worn next the skin and care taken to avoid chills and draughts. Massage of the affected muscles and of the entire body

is often extremely beneficial. The rubbing should be conducted in a centripetal (or towards the heart) direction, as otherwise it will do no good.

Muscular rheumatic pains can also, of course, be relieved by giving antipyrin, exalgin and other analgesics. I must strongly condemn this practice save as a most temporary measure for the relief of severe pain. It is purely symptom-treating—that great curse of modern medicine. Our object should be to search out causes and remove them and not to simply palliate results leaving causes untouched.

There is a very grave form of rheumatism seen in broken-down constitutions characterised by muscular pains with low adynamic symptoms. These cases rapidly sink in spite of all treatment and die; the affected muscles when examined after death are found occupied by dark, inspissated extravasations of blood into their substance, and the heart is found to contain anti-mortem clots. Beyond these there are no other distinct changes.

A form of acute articular rheumatism proving rapidly fatal (in about two days) often attacks chronic drunkards.

Rheumatic symptoms either of the acute or chronic, muscular or articular, types, in broken-down constitutions, and more especially in the intemperate, should always be regarded as of the gravest significance and the probability of an early fatal issue, communicated to the patient's friends. After some experience of cases of this kind, their recognition becomes easy, and an indefinable prescience warns the physician of their approaching end.

Remittent rheumatic attacks with effusions into the joints when they occur in young persons of temperate habits are also amenable to Carlsbad.

Case IIIa.———compounder, was regularly absent from duty for three or four consecutive days in every fortnight, owing to rheumatic effnsions into one of his knee-joints. On the third or fourth day he could always limp back to work again. He was a young, married, anæmic man, with large, deep, dark circles around his eyes such as are often present in functional liver cases. He had never had any venereal affections. He was put through a course of Carlsbad and had no attack for six months afterwards. Then feeling slight pain returning, he went through a second course. An annual course will probably keep him free of the disease for years. I need hardly add that he has become an eager apostle of Carlsbad and its virtues.

Malarial Paralysis. — Severe or long-continued malarial fevers often produce symptoms of paralysis or paresis of the lower limbs. This in one case in which an autopsy was obtained was found due to **spinal pachymeningitis**. There were no history or signs of previous syphilitic disease in any other part of this patient's body, and from the frequency of the occurrence of paretic symptoms in malarial cases, I conclude that thickening of the meninges of the cord is not an infrequent result of severe malarial fevers. It also occurs after tropical tyhoid fever.

Rheumatic thickening of the spinal dura mater may also occur, as I think the following case shows.

Case IIIb.—Miss———a pale, anæmic, delicate girl of 16, paraplegic and confined to bed for six months past. Control of sphincters was intact. Ankle clonus, front tap and exaggerated knee -jerk present in both legs. Rheumatic swellings on the back of both wrists. History of partial, previous

paretic attacks from which she had recovered. There were no ophthalmoscopic signs of disease. Diagnosis—Rheumatic spinal pachymeningitis. Treatment—A mild course of Carlsbad followed by iodides of iron and potassium, salicylates and alkalies, hot salt baths and liniment of iodine daily over the cord. In two months she got up and began to go about on crutches and has since been slowly improving.

Cerebro-spinal meningitis often occurs in epidemic form amongst natives.

On the Indian littoral care should be taken not to confound any nervous malarial symptoms with beri-beri.

Scurvy very readily attacks the subjects of malaria. It occurs most commonly in natives, during the most malarial part of the hot weather, *i.e.*, the rainy season. The disease seldom develops fully ; only the incipient stages are observed.

Europeans are, however, not exempt. An officer from a malarial frontier district, who had been shooting in a part of Kashmir where he could get neither fruit nor vegetables, returned covered with large scorbutic ulcers, spots and subcutaneous ecchymoses resembling huge bruises. He ate the same food as the coolies who accompanied him, but they living in the highlands of Kashmir were free from malaria and developed no scurvy.

The tendency to scurvy is manifested in the dusky hue, swelling and congestion of the gums which readily bleed on pressure. Such cases should have their quinine dissolved in lime juice, and should get rid of their scorbutic troubles before starting Carlsbad treatment.

II—Dysentery—

Acute and chronic—Amœboid dysentery—Liver abscess—Treatment—Diet—Necessity for extreme care in dieting—Carlsbad treatment almost a specific—Advantages of its adoption in military practice.

Dysentery occurs in two forms—acute and chronic. Only the very mildest forms of the acute affection can be treated by Carlsbad.

Chronic dysentery usually results from, and remains after, a previous acute attack. Dysentery is distinguished from diarrhoea by the presence in the motions of slimy matter, which may or may not be mixed with blood.

It is a most distressing affection, rapidly weakening and reducing the patient to a state of extreme emaciation, from which under our English methods of treatment very few recoveries ensue.

Fortunately Carlsbad is almost a specific for this affection, and the wonderful results it achieves must be seen to be believed.

The discovery of the **amœba** in the pus evacuated from many cases of **abscess of the liver*** has thrown a new and intelligible light on the obscure connection which has previously existed between that disease and dysentery or chronic diarrhoea.

The pathology of dysentery is at present in a transition stage, and how far the presence of the amœba in the intestinal contents may be answerable for the occurrence of the disease remains yet to be settled.

* See Dr. Manson's paper in the *British Medical Journal*: I am unable to find the date.

Up to the present my own impressions have been that as neuralgia is the prayer of a nerve for healthy blood, so dysentery is the request of the liver and intestines to be put into healthy working order. In an intestinal tract, in which that natural anti-septic—the bile—is deficient in quality or quantity, the amoeba would find a readier lodgment. The wonderful success of the Carlsbad treatment in dysenteric cases seems to support this view.

The result of my own experience has been that dysentery usually either accompanies or supervenes on a disordered state of the liver or digestive organs generally.

When a case has been allowed to run on neglected for years and the entire large intestine has become a stiff hardened tube, all treatment will be found useless.

Treatment.—The Carlsbad water should be given—rather hot at first—in the usual doses thrice daily,—*viz.*, in the morning, fasting, at 11 A.M., and again on going to bed at night. If the patient is weak, the dose must be diminished accordingly. Large enemata of either the hot natural or artificial water, measuring at least a quart, should be given night and morning, and retained as long as possible. To ensure this, they are best given in the kneeling posture with the hips elevated and the head on the ground, from an irrigation can hung on the wall. This method allows the hot alkaline water to run far up the colon, and so act upon all the parts where ulcers or mucoid degeneration of the epithelium exist.

For distressing tenesmus (bearing down) either a drachm of Tr. opii or 30 grains of antipyrin dissolved in 4 ounces of starch mucilage given as an enema

secures instant relief. The patient should also be made to lie down in bed and kept quiet. Liniment of iodine or turpentine should be applied daily over the liver and front of abdomen generally until the skin becomes tender. A hydropathic belt is also of great use. The object is to keep the skin continually irritated and tender for some weeks. Should doing so excite fever it must be at once stopped and a soothing ointment applied. A warm flannel belt or knitted woollen *cummerbund* and woollen under-clothing must also be worn and every precaution against cold and chills adopted.

The **diet** at the same time needs the most careful regulation. All **meat and stimulants** must be at once **stopped**, and a rigid milk diet enforced. This may be gradually increased to boiled rice and milk, bread and milk, sago, tapioca, arrowroot, &c. Soft boiled fish like the turbot, or in India the *rohu*, may be allowed later on.

Indigestible fish, like salmon, mackerel, sardines, bloaters, &c., must on no account be given.

Eggs beaten up in tea, cocoa and milk, dry toast, Frame food, Horlick's malted milk, will all be found useful variations of the monotonous dietary.

Many patients have depraved appetites and insist on eating mutton chops, ham, beefsteaks, and other things equally injurious, when sent home alone and without proper supervision. I have heard of a doctor even, who, when invalidated home for chronic dysentery, insisted on continually eating mutton chops, until he made himself so ill that he could do so no longer. The prohibition of alcoholic drinks should be carefully maintained. If the patient feels weak, give a

cup of hot tea, cocoa or soup, but on no account allow coffee. If this is found insufficient, give a mixture containing digitalis, ext. cocæ liq. and spts. ammon. aromat., which will be found a good substitute for alcohol.

It must be remembered that pure undiluted milk is extremely difficult even for the strong and healthy to digest. It should therefore be given to patients diluted with an equal bulk of water.

In the case of native patients, great care should be taken that the flour from which their food is made does not contain branny particles. These irritate the intestines and maintain the disease. *Chupatties* should be forbidden until convalescence is very fully established. Rice boiled in milk, until it becomes gelatinous, is the best diet for them. It is known as *kheer*.

The slightest irregularity in diet will throw the patient back at once and induce relapses.

Disappointment should not be felt if the first course of Carlsbad treatment does not afford complete relief; a second course about three months later will often cure the most obstinate cases.

I know of no disease in which Carlsbad is more efficacious than in chronic dysentery and diarrhoea, and no case should be given up, or put to the expense of a journey to Europe, until it has been fully tried. Except in the most advanced or neglected cases success is practically certain, but the patient can frustrate all efforts to cure him by not doing what he is ordered. He should be plainly informed that his own complete co-operation is indispensable. A great future awaits the adoption of this treatment for dysenteric cases amongst British troops. These cases are

now sent to England at enormous expense to the State in money and efficiency, whereas a few months in a hill climate with Carlsbad treatment would quite cure them.

Amongst native troops also a large amount of invaliding could be avoided.

The French Government send their soldiers invalided from Algiers, Madagascar, and Cochin to the alkaline springs at Vichy, where they nearly all recover. The Austrian Government send their soldiers who have contracted malaria and dysentery, whilst serving along the Danube marshes and other malarial parts of Austria and Hungary to Carlsbad, where there is a large hospital and every comfort for them. The German and Italian Governments arrange for similar treatment of their malarial and dysenteric military patients at suitable mineral springs in their own territories. The Government of India would effect large savings if they established systems of Carlsbad treatment during the hot weather at the various hill depôts.

III.—Tropical Diarrhœa—Hill Diarrhœa—Irritative Diarrhœa.

Tropical white diarrhœa—Hill diarrhœa—Treatment of both varieties—Irritative diarrhœa, bacteriology of—Treatment—a very fatal disease of infants—Chronic gastric irritability of strumous children—Irritative spermatorrhœa of adolescents—Bilious diarrhœa.

Chronic Tropical diarrhœa or white diarrhœa is characterised by the occurrence of “numerous, pale, whitish, frothy, semi-fluid motions.” These give little trouble at first, but gradually the patient grows

weak and low, becomes paler and more and more anaemic. After the disease has lasted some weeks the tongue and gums begin to present a peculiar raw, red appearance, accompanied sometimes by actual ulceration or white aphthous spots. The tongue grows glazed, red and tender. In advanced cases this is accompanied by a general thinning and atrophy of the coats of the intestines which grow as translucent as a sheet of paper. All the internal organs shrink and atrophy. The patient's eyes sink in, he grows more and more emaciated, and the face begins to assume that peculiar waxy look so suggestive of amyloid degenerations in the internal organs, and which is so often seen in cases of chronic tropical dysentery.

There is little, if any, pain or discomfort. This condition may continue for years until the patient's organs become permanently diseased, when recovery is impossible and death ensues gradually from exhaustion or suddenly from pulmonary thrombosis.

Hill diarrhoea seems to be a variety of the above affection, but differs from it in the fact that it ceases at or about 11 A.M. daily—a curious fact of which we have not yet found the explanation. It occurs as, the name implies, in the hills, at an elevation of over 5,000 feet, and is most prevalent during the rainy season. Recovery generally ensues when the patient comes down to the plains for the cold weather. It is apparently a diarrhoea of semi-digested food and presents all the characters of a gastro-intestinal catarrh,—in other words, a form of indigestion.

As Civil Surgeon of a hill station, my experience was that some incipient cases were stopped by

Hewlett's Mist. Bismuthi * et Pepsinæ Co., others by a few days of Carlsbad treatment, whilst some cases were totally unaffected by treatment. It affected most those who were the subjects of 'tropical cachexia' or anæmia, but even those who had only arrived from England a few months ago, were not exempt. Many, whom I knew to be suffering from it, went about, danced, rode and amused themselves apparently little the worse of it. Finally, I came to the conclusion that the most valuable remedy was Carlsbad, and that in the cases where it failed the failure was due to the patient's continuing to indulge in a liberal diet of meat and all kinds of indigestible things instead of living on milk and puddings as ordered. The Carlsbad acts by relieving the catarrhal condition of the intestinal tract and by producing the flow of bile necessary to keep putrefactive changes in check. The only other precautions necessary are to give a wholly unirritating dietary of milk, puddings, &c., to guard against chills, over-exertion and exposure. Butter and greasy matters should also be excluded.

Iodine liniment over the liver, hot salt water baths and electricity over the liver are often very efficacious.

The white diarrhoea of the plains may almost invariably be taken as an indication that the patient needs a thorough change out of a malarial country. *Res angusta domi* in these times often renders a trip to Europe totally impossible. The hills in the rains are not suitable for a case of long standing. I have,

* An alkaline solution of bismuth and pepsine.

however, seen *recent* cases get well very rapidly in the hills. For cases of over a month's standing, unable to afford a trip to Europe, I would recommend a trip to Sydney by P. & O. It is cheap, a cooler voyage than that to England, and a complete change. If economy is an object, excellent accommodation can be had in country hotels or in city boarding-houses at from 25s. per week in any of the Colonies. The Carlsbad course can be most excellently carried out on the voyage, and the malarial patient can have the hot salt water baths which will prove of the greatest use to him. Neither acid nor iron should be given, both disagree. The diet should be milk, rice and various milk puddings, Frame food puddings or Horlick's malted milk, Benger's or Mellin's foods. When colour begins to return to the motions and they cease to be semi-fluid the diet may be cautiously increased. An egg beaten up in a cup of tea, a soft boiled egg or a poached egg may be tentatively ventured upon, then chicken purée, white minced chicken, boiled fish, and so on. If the patient is not extremely low he is better without stimulants. Virol, a bone-marrow fat, may be given for the anæmia and emaciation during convalescence.

Acute Irritative Diarrhœa occurs as the result of putrefactive decomposition of the intestinal contents. This result is due to several concomitant causes which may not be always the same. In some cases it is due to the consumption of tainted food, in others to overloading the stomach with indigestible matters. It is more apt to occur if chronic intestinal (gastro-duodenal) catarrh and slight congestion of the liver are present.

Dr. S. Martin has isolated a bacillus with flattened ends from the stools of a patient suffering from tropical diarrhoea furnished him by Sir Joseph Fayrer. This bacillus grows well in gelatine and produces large bubbles of gas whilst doing so. (Davidson's 'Diseases of Warm Climates,' p. 531).

It is more than probable that it is this organism which produces the frothy stools we are so familiar with in the tropical, hill and irritative forms of diarrhoea. It may be constantly present in the intestine but kept in check by the antiseptic action of the bile. A chill acting on the liver would diminish the quantity and quality of the bile when this flat-ended bacillus could develop unrestrainedly and so produce diarrhoea.

It is important to be able to recognise irritative diarrhoea and to check it, more especially in children. It is one of the most fatal diseases of children in this country and is apt to run on to inflammation of the bowels if not checked.

The treatment which checks ordinary diarrhoea makes irritative diarrhoea worse.

Symptoms.—Irritative diarrhoea comes on after food is taken. It passes through undigested. The motions are very pale in colour, *frothy* and highly acid * in reaction--excoriating the anus and rendering it extremely painful.

The bowels become so irritated that they can retain nothing. Hence a motion follows immediately after anything is ingested.

† Other forms of irritative diarrhoea in which the motions are alkaline have been well described by many German writers.

Treatment.—The indications are :—

1. Clear out the irritating contents of the bowels.
2. Produce intestinal antiseptis.
3. Soothe irritation.

This is effected by giving the following* :—

| | | |
|-----------------------|-----|---------|
| Rx. Olei ricini | ... | ... 3vi |
| Sodii bicarb | ... | ... 3ii |
| Salol ... | ... | ... 3i |
| Spts. chloroformi ... | | ... 3ii |
| Mucilaginis acaciæ ad | | ... 3vi |
| <i>Ft. emulsio</i> | ... | ... m. |

Mixture—6 marks. One mark every third hour.

The dose for an infant is only one tea spoonful. A single dose of this mixture often suffices to give relief.

The bicarbonate of soda unites with the acid contents of the intestine, partially neutralising them, and so diminishing the irritability.

The salol splits up into carbolic and salicylic acids, whilst the castor oil eliminates all irritating and decomposed matters and at the same time soothes. If necessary, some morphia may be added to the mixture to check excessive peristalsis.

In Infants this disease, if allowed to continue too long, becomes incapable of cure and death results. All milk should be stopped, and the child put on soup and barley water until the motions cease to be curdled. The abdomen may also be poulticed.†

* This mixture effervesces after being made up and often blows the cork out of the bottle.

† The anal excoriation should be allayed with castor or carron oils, or ungt. gallæ c. opio.

Carlsbad should not be given during the acute attack, but only after convalescence is well established. Its main use is then to remove the catarrhal condition which remains and to put the liver in proper working order again.

An alkaline solution of bismuth with pepsine, morphia and hydrocyanic acid—prepared and sold by Messrs. Hewlett of London, under the name of Liq. Bismuthi et Pepsinæ Co.,—is most efficacious in soothing the irritated intestines after all offending matters have been expelled.

The ordinary sulphuric acid and opium mixture, usually given for diarrhœa, appears to me most unsuited for tropical cases where almost every patient has intestinal catarrh. It does the greatest harm in irritative forms of diarrhœa.

All meat diet should be stopped and clear soups, beef tea, tea or cocoa made with water given for a day or so. Then Mellin's food made with water or Benger's food *made with whey*, which has itself been made with Benger's Essence of Rennet, can be cautiously started. Carnrick's Liquid Peptonoids are invaluable in extreme and asthenic cases. They both nourish, stimulate and are very palatable. Unless you are extremely cautious about the diet, delicate children will slip through your hands and die in a very few days' illness.

Chronic gastric irritability of strumous children.—Some children, mainly those of a strumous constitution, exhibit a form of chronic irritability of the intestines and are continually getting slight acute attacks. These give great trouble and impede the child's growth and development.

In such cases I have found a mild course of Carlsbad in doses of from 5 to 20 grains of the salt, every morning and evening, of the greatest use. In many cases it effected a permanent cure. The diet will need great attention. I have seen several cases which could only take whey, Benger's food made with whey, or Mellin's food made with water. Older children must be kept from eating fruits or acids.

Irritative spermatorrhœa of adolescents.—In young men of strumous constitution or who suffer from acid dyspepsia, a form of nocturnal emission occurs which appears to me to be purely irritative and due to excessive acidity of the urine. I have been fortunate enough to be able to completely cure many such cases amongst both Europeans and Natives. The emissions cease after only a few days of Carlsbad treatment. The course should, however, be fully carried out, or an early recurrence must be expected owing to the constitutional causes which produced the condition not having been removed.

I mention this here because it is often associated with intestinal irritability and the constitutional conditions which give rise to it.

White or pale yellow loose motions of a few days' duration indicate one of the slight attacks of gastro-duodenal catarrh to which we are all so liable in the tropics—due to a chill or some error in diet. This should be treated by low milk diet and rest. Small doses of 1 grain of hydrarg. c. creta or $\frac{1}{3}$ grain of calomel are very useful, but the same treatment as for the dark bilious diarrhoea described below is usually efficacious.

The ordinary dark-coloured copious diarrhoea which results from a chill causing slight congestion of the liver had better not be suddenly checked. It is nature's method of relief. Put on a hot stupe over the liver and rub in turpentine. Hot Carlsbad should not be taken during such an attack. It might increase the congestion. Give about 5 grains of pil. hydrargyri on going to bed at night for a few days, followed in the morning by a teaspoonful of Carlsbad salt in a glass of tepid water.

IV.—Liver—

Symptoms of chronic congestion—"Tropical Liver"—Treatment—Diet—Hydropathic belt: its great efficacy—Objections to use of acid—Purulent anal discharge or moist condition of anus in chronic liver congestion.

There are several different affections included under this very comprehensive term. One has already been described in the concluding paragraph of the last section and its treatment given.

The chronic form of liver is, however, that which gives the greatest trouble and is most worthy of attention.

It is due to a slight but continued congestion of the liver which has the effect of interfering with the proper performance of its normal function—that of elaborating the products of digestion. These pass through the liver in an immature or unconverted condition and circulate in the blood where they have all the effects of depressant poisons.

Symptoms.—There may be more or less sense of heaviness, tenderness or actual pain in the liver.

Localised tender or painful spots are often present. A frequent site of these is in the right shoulder and down the arm, under the right shoulder blade, or over the cartilages of the 8th or 9th ribs on the right side. Another site of tenderness or uneasy sensations is about three inches directly below the apex of the inferior angle of the shoulder blade. This is due probably to wind in the duodenum (second stage), and can be at once relieved by some chloroform water, raw spirits or other good carminative. The most usual sensation is for the patient to feel that his liver is as heavy as lead and tender on deep pressure with a general sense of distension and fulness. The organ is often perceptibly enlarged and suffers a painful jar on any sudden movement.

An intense melancholy, deep mental depression, sense of failure in life, want of energy and of self-reliance, a feeling of incapacity, stupidity or muddle-headedness are all more or less characteristic of this form of liver affection. Heine exactly expressed the sentiments of a victim of liver when he wrote. "*Grau wie der Himmel Scheint vor mir die Welt.*" He probably had it himself at the time.

The tongue is thickly loaded, the breath offensive, the appetite capricious, very slight or voracious, when dilatation of the stomach is present. In some cases there is constipation, in others diarrhoea. The motions are often pale and whitish in colour. Sleep may be either deep and almost drunken in its heaviness, or scanty, fitful and disturbed by dreams and nocturnal terrors. In both cases it is unrefreshing, and on rising in the morning the bones and entire body and limbs ache.

A feeling of nausea often remains constantly present. Bilious vomiting on rising in the morning occurs in free livers who consume much alcohol. In most cases the attempt to use a tooth brush in the morning excites nausea or vomiting. This is often the first symptom of which the patient informs his doctor. The chronic state of irritability and bad temper of liver patients has already become proverbial. On account of it they are generally shunned and avoided.

Treatment.—The diet will need to be freely cut down to tea,* toast, porridge, soup, light puddings, poached eggs, &c. All alcohol should be stopped. The more nearly the dietary approaches both vegetarianism and total abstinence the better.

All the other symptoms "can be set right with calomel," blue pill, podophyllin or euonymin given in moderate doses nightly for a few days followed each morning by a teaspoonful of Carlsbad salt in half a pint of tepid water. An early opportunity should be taken of putting the patient through a *complete course of Carlsbad*. The above will suffice as a temporary measure only. Liniment of iodine or of turpentine should be applied freely over the liver and abdomen until the skin becomes tender. This condition of tenderness should be maintained by occasional repetitions of the liniment.

A hydropathic belt applied until the skin breaks is also very useful. Hot salt water baths and electri-

* In some cases tea, especially when taken rather hot, produces indigestion with great depression. In such cases milk and soda or weak cocoa should be substituted.

city applied over the liver whilst in them are useful in obstinate cases.

A **hydropathic belt** consists of a piece of smooth thick cotton cloth about 4 feet by 1 foot wetted in tepid water and applied next the skin around the waist. Over this is wrapped a piece of mackintosh to prevent evaporation, and over both a flannel roller is wound several times round the waist to maintain warmth and keep all in position. The cotton cloth is removed twice or thrice daily, wetted and re-applied. In a week or ten days under this treatment the skin breaks down and the entire waist becomes red and raw. The bandage is, however, continued as before, and after a time complete healing results. The hydropaths allege that this is due to all deleterious matters having been eliminated from the body.

Be this as it may, this is one of the most successful treatments for both malarially enlarged liver and spleen, as well as for the functional form of liver derangement we have now discussed. Under it many cases which have resisted all other treatment get quite well. It is also very useful in continually recurring attacks of ague which resist all other treatment. With the method of treating liver cases by large doses of nitro-muriatic acid I entirely disagree. It may be taken as a general rule that liver cases invariably have intestinal catarrh, and this condition is exacerbated by any form of acid treatment; the intestines are irritated, nutrition thereby impaired and perhaps obstructive jaundice also produced.

Small doses of nitro-muriatic acid—5 to 7 minims—are only admissible with food, *some time after* a

continuous course of alkalies and salines, to increase appetite and give tone to the stomach.

Many tropical patients suffer from a very unpleasant and distressing symptom, *viz.*, a **permanently moist condition of, or purulent discharge from,** the anus. This is due to a congested state of the portal system producing hæmorrhoidal congestion of those parts. It is often associated with piles. If these do not disappear after a course of Carlsbad, they should be removed by operation. A few courses of Carlsbad, enemata of it used night and morning with restricted diet and stoppage of alcoholic drinks completely cures this condition. A permanent itchiness of the anus is also a frequent symptom of chronic functional liver trouble (Fothergill).

Change to a good climate is also often necessary.

CHAPTER VIII.

ON SOME FORMS OF DYSPEPSIA COMMON IN THE TROPICS.

Primary Indigestion—*Its varieties, viz., Atonic, Bilious, Irritative and Catarrhal, and their treatment*—*Three varieties of Irritative Dyspepsia: the Indiscretionary, the Strumous and the Gouty—Painful Dyspepsia, "Waist pain"*—*General directions to Dyspeptics—Skeleton Ménus—Liver Indigestion or Secondary Dyspepsia; its peculiar symptoms—Treatment.*

LIVING as the great majority of us do in a bad climate, amidst the depressing influences of heat, continual work, worry and inferior food, it is not to be wondered at that dyspepsia in many forms is rife amongst us.

To understand the various kinds of dyspepsia and to be thus able to intelligently help your doctor in the treatment of your own case, a little preliminary knowledge is necessary.

The food we eat is broken up, rendered soluble and fit for absorption into the blood and system whilst in the stomach and intestinal tract.

This may be termed the *First Stage of Digestion*. Any interference with or imperfect performance of this stage is termed **Primary Indigestion**.

The food so reduced to a soluble and easily absorbed condition is sucked up mainly into the veins of the portal system which all pass through the liver

The products of digestion in their passage through the liver are subjected to a further refinement and elaboration.

This may be termed the *Second Stage of Digestion*. Any interference with this process is termed **Secondary or Liver Indigestion**.

If this process of revision and control were not adopted in the liver, deleterious and poisonous matters would accumulate in the system and speedily prove fatal.

This ejection of these deleterious matters from the system is known physiologically as **proteid metabolism**. One of the commonest products of imperfect proteid metabolism is uric acid, which retained and accumulated in the system produces gout—a familiar but unwelcome acquaintance.

A pure classification of the various forms of dyspepsia is hardly possible, as many various clinical and pathological types occur simultaneously and overlap or complicate each other.

After much deliberation, I have adopted the following classification :—

A. Primary Indigestions.

TYPES.—1. **Atonic.**

2. **Bilious.**

3. **Irritative...** $\left. \begin{array}{l} \alpha \text{ Indiscretionary.} \\ \beta \text{ Strumous.} \\ \gamma \text{ Gouty.} \end{array} \right\}$

4. **Tropical or Catarrhal.**

B. Secondary or Liver Indigestion.

1. **Atonic Indigestion—The Dyspepsia of Exhaustion.**—This may be most simply described as a complete exhaustion—an extreme state of fatigue of the stomach.

It is met with in anaemic females and in people run down by malarial or other exhausting disease.

Symptoms.—The subjects of this form of dyspepsia are pale, sallow, anaemic, listless, flabby, disinclined for and incapable of any sustained exertion or work. There is little or no appetite; the gastric juices, the functions of which are to act upon and digest the food, are deficient both in quantity and quality.

The tongue is large, pale, furred, flabby and *indented at the edges by the teeth*—the breath heavy and unpleasant. Amenorrhœa and constipation are the rule.

The patient usually has an appetite for things which are most indigestible and injurious—*e.g.*, salads, cucumber, tinned fish, savouries, nuts, &c.

In the purest forms of this variety of dyspepsia the patient complains of few subjective symptoms referable to the digestive tract. In mixed types there may be *waist pain*, heartburn, pain under the left breast and up along the sides of the breast bone, palpitations, breathlessness, giddiness, singing in the ears, faintings, &c.

Most of these are merely symptoms of the anaemia which accompanies this form of dyspepsia.

The gastric juice is a natural antiseptic, dissolving and digesting the food before it can decompose. Owing to its deficiency in atonic dyspepsia, the food taken is not properly digested. It decomposes in the digestive tract, becomes sour, rancid, and gives rise to much flatulence and eructations of wind.

Treatment.—This form of dyspepsia *should not* be treated by Carlsbad. Homburg water to start with

will be found to answer well. After the system has been roused and vitalised to a certain extent by it, bitter and acid tonics with an aloes and iron pill after food should be given. Fresh air, exercise, riding, open air games and amusements, sea bathing or a marching tour in the hills or Kashmir will be necessary to restore the general health. Good, plain, nutritious food ; grilled chops and steaks with a prohibition of tea and made dishes is advised. If the patient is very weak, raw meat juice, raw meat sandwiches, or Carnick's Liquid Peptonoids give a maximum of nutriment with a minimum of trouble in digesting it. Red wine (Burgundy, Carlowitz or Australian claret) or stout suits many cases. In others if found not to suit it should not be continued. A change of air or climate is almost always necessary for these cases. They are apt, if neglected, to run on into consumption. Highly sensitive girls occasionally develop this form of dyspepsia with anaemia, neurasthenia and some form of mental disturbance after an unfortunate '*affaire de cœur.*' Such cases require a course of Weir-Mitchell treatment.

2. Biliary Indigestion—Drunkard's Dyspepsia.— This form is characterised by the occurrence of biliary vomiting on first rising in the morning. It is usually the result of alcoholic intemperance of some duration and is associated with congestive changes in the liver, which are certain to end in incurable organic disease* of that organ and of the stomach, unless temperate habits are speedily resumed.

* CASE NO. IV.—An elderly retired officer of high rank, died under circumstances and with symptoms strongly pointing to his having been slowly poisoned with an irritant poison. His stomach was examined,

Other forms of bilious vomiting, wholly independent of alcoholic intemperance, occur in individuals whose digestion is naturally feeble but who have not the strength of mind to refrain from certain articles of food. Greasy dishes, fats, butter, cream, rich foods of various kinds, all excite it in various constitutions. Its occurrence is a matter of individual peculiarity. The individual should, however, learn to refrain from what he knows will not agree with him.

The muscular coats of the stomach and intestines keep up wavelike contractions during digestion, which drive the food on in a downward direction. Under certain circumstances the direction of these contractions becomes reversed and bile is driven back into the stomach. This stops gastric digestion and leads to nausea and vomiting.

Some persons get attacks of bilious vomiting once or twice monthly. Such attacks may be associated with the unsuspected presence of gall stones.

Treatment.—The resumption of temperance in food and drink with a course of Carlsbad treatment will soon produce a marked improvement. Even in cases where the presence of gall stones is the cause of the attacks, it removes them and further removes the tendency of the liver to form them. Some blue pill at night, twice weekly, will be found a useful addition to the treatment.

From the thickness of its coats, the appearances of chronic inflammation on its interior and the absence of any traces of poison in it, there was no doubt but that death was due to inflammation of the stomach in a gouty subject of intemperate habits. The coats of the stomach were as thick as the sole of an ordinary boot, and its condition amply explained the continuous bilious vomiting from which he suffered.

3. Irritative Indigestion—The Dyspepsia of Gluttony.—When a person, unaccustomed to do so, walks too far his feet become red, irritated and blistered. If the stomach has large quantities of food thrust into it at meal times and also at frequent odd intervals during the day, it gets overworked and irritable. If the food supplied to the stomach in this profuse manner is of an indigestible kind, the effect it produces is hastened and aggravated.

The stomach can only dispose of a certain amount of food properly, and if this quantity is exceeded it is either rejected as in bilious vomiting, or the food becomes sour, acid and irritating from decomposition. This irritating mass in the stomach excites it to violent propulsive movements—their object being to drive it on down into the intestines. These in their turn get irritated also and drive it on still further, and so a diarrhoea of undigested food may finally result. Nature has thus two ways of relieving itself from such a condition of affairs by (1) vomiting, (2) diarrhoea.

When diarrhoea occurs it usually takes the form of the irritative frothy affection described at p. 28.

Chills acting on such a case as I have here described, are the commonest cause of the chronic white diarrhoea (*diarrhoea alba*) so common in the tropics. It is a gastro-intestinal catarrh and most amenable to properly conducted Carlsbad treatment and simple dieting.

The continued irritation of the stomach in these cases leads to an excessive production of acid in its interior. This causes still further irritation. This acid is partly the result of decomposition and partly

an increased secretion poured out under the influence of the irritation present.

Symptoms.—A furred tongue with small red spots in front and enlarged papillæ behind. The tip and edges of the tongue are often quite red and painful or tender when pressed against the teeth. There is pain or tenderness over the pit of the stomach—increased by pressure. Pain due to wind alone is rather relieved by pressure. Sensations of pain, distension and discomfort are experienced after taking food. Flatulence and eructations of wind and sour flood into the mouth are also frequent. There may be heartburn—a burning sensation commencing at the stomach and extending right up to the throat—or a motion of the bowels immediately after food is taken. When Second Physician to the Mayo Hospital, Lahore, I found it made this form of indigestion easier for the students to understand and remember, to divide it into three clinical varieties, all of common occurrence. These are ;—The form I have just described which may be termed—

- a. **The Indiscretionary.**
- β. **The Strumous**, occurring in children with a scrofulous (consumptive) taint.

- γ. **The Gouty**, occurring mostly in elderly men.

β. **The Strumous type.**—Strumous children are frequently the subjects of an irritable condition of the digestive tract. This manifests itself in the infant in curdled, slimy diarrhœa with burning acid motions excoriating the parts—in the child, in a very tender and easily-irritated stomach which a little fresh fruit or any unwonted amount of food inflames. These children seem rapidly to develop an excessive gastric

acidity whether from food decomposition or irritative secretion I cannot say. This leads to excessive acidity of the urine, local irritation and nocturnal enuresis. The irritability of the digestive tract renders them incapable of making full use of the food they eat, and they remain in consequence puny and delicate or grow up lanky and sickly.

γ. The Gouty.—This occurs in people who have a family history of gout. They are usually at or beyond the period of middle life.

These cases in the most pronounced types have a large clean tongue, almost as red as a beefsteak. Such cases suffer much from acid eructations and tenderness of the stomach and bowels : the palms of the hands and the soles of the feet are found to be hot, and the patient complains of a burning sensation in them, which is worse at night.

This condition in a man over 45 ought always to be regarded as a grave one. The continued irritation of the stomach is most likely to **result in cancer** (pyloric). Such cases should be sent to Vichy without delay. There are milder degrees of this affection which a carefully regulated diet and Carlsbad treatment will set right, but frequent relapses will occur unless the greatest care in drink and diet is maintained.

4. Tropical or Catarrhal Indigestion.—This form is the result partly of the congestive effects of the climate on our internal organs and partly of successive slight attacks of the irritative form.

Symptoms.—A thickly-furred tongue, known as the Indian or "*tropical tongue*," frequent irregular

attacks of diarrhoea and of slight jaundice with pale whitish motions, heavy, muddy, yellow eyes. The patient is heavy, languid, lazy but short-tempered and irascible. This form of catarrh is usually associated with more or less congestive liver trouble. In such cases there is a feeling of weight and heaviness in the liver with distension and fulness of the abdomen. Tenesmus is a frequent symptom. The calls to stool are urgent, but little relief is obtained, only small, slimy, mucus-coated motions being voided. Piles with a moist or purulent discharge are also often present. The appetite may be voracious if dilatation of the stomach is also present or almost *nil* in other cases. There is an unpleasant taste in the mouth and the breath heavy and disagreeable. The urine often burns, scalds and irritates. A certain amount of atony is often associated with this form.

Treatment.—The water should be taken in small doses to start with, *viz.*, 3 to 6 ounces at a temperature of 70° F. thrice daily, night, noon and morning. When the artificial water is used great care should be taken to add to it some soda water when making it up. The presence of the gas in it is necessary to prevent it producing atony of the stomach—a complication most likely to occur in the treatment of this form of dyspepsia. Enemata of the hot water about 100° F. should be given every night. For internal use the water should be much colder, about 70° F. This affection is really a chronic catarrh of the stomach, intestines, and bile ducts, with more or less chronic congestion of the liver. This is one of the affections in which Carlsbad effects the maximum of

benefit. No acids are on any account to be allowed. In these cases they are most unsuitable. The course will in these cases need to be prolonged to five or six weeks. If heartburn arises during it the water should be stopped for a few days, and on its again being resumed should be given still colder. The amount of the dose must be regulated to the strength of the patient. During the first week single 6-ounce doses, thrice daily, suffice. During the second week the morning dose may be doubled ; and during the third week, trebled. Except in very obese subjects, it is seldom necessary to further increase these quantities.

The onset of atony of the stomach must be carefully watched for. Heartburn and want of appetite are the initial symptoms. When these arise the water is to be at once stopped for a few days, during which a single glass of three ounces of Homburg water may be given in the morning. Highly aërated (carbonated) waters should be given with meals ; tea at breakfast should be stopped, and a glass of soda water and milk substituted for it. **As long as the Carlsbad water is doing good it increases the appetite.** When a Carlsbad patient ceases to have a good appetite for his meals, then search for some complication and lower the temperature of the water.

Painful Dyspepsia—“Waist pain.”—There is a special form of pain in the stomach, of frequent occurrence in all the various forms of dyspepsia, known generally as “waist pain.” I cannot say exactly to what it is due, but it is probably the result of a combination of flatulence and irritation.

The following mixture is most effectual in relieving it :—

| | | |
|------------------------------|-----|------------------------|
| R. Sodii Sulph. | ... | ... $\frac{3}{4}$ i |
| Acidi Hydrocyanici dil. B.P. | ... | m. xxiv. |
| Cocaine Hydrochloratis | ... | gr. iv. |
| Glycerini | ... | $\frac{3}{4}$ i ss. |
| Aq. Chloroformi | ... | ad $\frac{3}{4}$ viii. |
| | | M. |

MIXTURE.—8 marks. One mark to relieve pain about an hour before food.

Hewlett's Mist. Bismuthi et Pepsinæ Co. is also efficacious in those who can tolerate opium or morphia.

The waist pain usually comes on when fasting, about an hour before meals. Food sometimes relieves and sometimes aggravates it. I find it most frequent in constipated subjects who have a deficient flow of bile.

General Directions to Dyspeptics.—The following hints will be found of use :—

Drink little or no fluid with meals ; it dilutes the gastric juice and weakens its power of digestion. For this reason soup with luncheon and dinner and tea with breakfast should be given up. If you cannot do without fluid at meals, try taking a cup of warm soup about an hour *before* meals. Don't drink until about two hours *after* meals.

Give up tea, especially afternoon tea.

Eat as little at a time as possible. The stomach can dispose of a little of most things, but not of too much of anything.

Avoid chills. Avoid alcohol, aërated drinks, tobacco and all excesses or indulgences of every kind. Drink plain boiled or distilled water.

The Roman Catholic system of eating no meat on one day of the week and of fasting to a certain extent during Lent is most admirable and worthy of adoption. In spring, during the change of season, we are most liable to illness. By giving a partial rest to our digestive organs and not overloading them, during this period, we give the *vis medicatrix naturæ* an opportunity of asserting itself and clearing away the dawnings of disease.

The great difficulty with dyspeptic patients is to get them to conform to a system. They find it too irksome. My advice to such persons is—"You can eat a little of everything, but not too much of anything." Starvation or moderation is one of the best cures. It is only when his sufferings become too great that the dyspeptic will submit to a system. The very moderate restrictions of a Carlsbad course for three weeks ought to be within the capabilities of endurance of most, especially if they consider that renewed health and vigour of digestion will be earned thereby. Persons suffering much, and who cannot control themselves, should go to a foreign watering-place or an English hydropathic or other establishment, where they would find it impossible to get any save the food permitted them.

I append a few skeleton *ménus* for dyspeptics and Carlsbad patients. During the Carlsbad course it is better to take luncheon daily. At other times a late breakfast, about 12 o'clock, suits most people better.

BREAKFASTS.

1.—*Carlsbad Regulation.*

- 3 Soft-boiled eggs (Indian eggs being smaller three are allowed).

- 4 Slices Zwiebach (toast), about 6 ounces.
1 Cup of tea or cocoa.

2.—For Renal Cases.

- Cold Ham 3 ounces.
Zwiebach.
1 Cup of tea or cocoa.

3.—Ordinary Cases.

- Sweetbread 3 ozs. (done on gridiron).
Zwiebach.
1 Cup coffee, tea or cocoa.

4.—Ordinary Cases.

- Brain cutlets 3 ozs.
Zwiebach.
Tea, coffee or cocoa.
No jams and no acids or salads allowed.

LUNCHEON.

1. Boiled fish (Rohu).
Rice pudding (containing eggs and raisins).
2. Chicken purée.
Custard Soufflet.
3. Rice with 2 boiled eggs.
Stewed figs and custard.
4. Fried fish, 2 eggs and rice (Butchwa or Chilwas).
Stewed Apples, pears, tiparis, guavas (according to season), with custard.

DINNER.

1. Roast sirloin of beef 5 ozs.
Stewed figs with custard.
2. Boiled mutton 5 ozs.
Stewed prunes and rice.
3. Irish stew.
Stewed apricots (dried Kabuli) and custard.
4. Roast chicken.
Vermicelli pudding (without cheese and with very little butter).

Renal cases should take a salt meat or fish at, at least one, meal daily.

These skeleton *ménus* are to be supplemented with well-cooked dal, potatoes and vegetables to taste. It is to be remembered that watery vegetables like cabbages, turnips, artichokes, vegetable marrows, green peas, beans, &c., are very productive of flatulence, and should either be avoided or taken in very small quantities.

Well-boiled *dal* makes an excellent addition in place of watery vegetables. It contains the same amount of nitrogen as meat and is an excellent laxative.

Use Stern's pepsalia in place of ordinary table salt.

B. Secondary or Liver Indigestion.—This form is due to an inactivity on the part of the liver which fails to exercise a proper supervision and control on the products of digestion which pass through it. This results in the system being supplied with the imperfectly elaborated products of an impure digestion, instead of with pure and healthy blood. These products of imperfect proteid metabolism act as depressant, narcotic and irritant poisons. Liver indigestion occurs most frequently in persons who have much business worry, making unceasing demands upon their mental faculties.

It is an affection of high-pressure, nineteenth century existence—one of the prices we pay for our increasing civilization and artificial lives in towns and offices. It is of frequent occurrence in the children of gouty, rheumatic or malarial ancestors, who inherit the defective livers of their parents.

Symptoms.—The subjects of this affection are very often of great mental capacity. Keen, eager, alert, of powerful mental grasp, terse, trenchant and

demolishing in argument, vigorous, prompt and decisive when roused to action, they are in the human what the sharp Scotch and Irish terriers are in the canine race, but without the good temper, and untiring activity of these animals.

These good qualities are marred by a petulance, querulousness, irritability and irascibility of temper and by an inequality in the level of their mental achievements from day to day. His friends remark "He is a very clever fellow, but he has a very curious "temper."

Some men turn out most excellent work one day, whilst the next it is very poor. This is often the result not of a defective character but of liver indigestion.

Sallow, thin, sharp-faced with rather an unwholesome look, they resemble Americans more than Britons.

It must be distinctly understood that I am only describing a prominent type, in which this affection occurs, and that it is not by any means confined to persons answering to the above description.

The sallow complexion and anæmic appearance of these patients must not be mistaken for delicacy. As a rule it is not. It is the anæmia of gout—of uric acid in the blood—the so-called poor man's gout or anæmic variety of the disease as distinguished from the florid, ruddy, hearty type of gout as it affects the good old country gentleman.

The state of temper in the two varieties of gout is interesting. In the florid type there are violent ebullitions of healthy, but transient, wrath. In the anæmic variety there is a continual smouldering of

ill-suppressed irritation, ready to break out on the slightest cause. The patient's entire nature apparently becomes warped. He no longer trusts or believes in any person or thing. His actions become those of malevolent fiend, and he ultimately comes to resemble a snappish, ill-conditioned cur more than a man. Such men should never be promoted to administrative posts. They exasperate and irritate the men who serve under them over petty trifles and turn the best of public servants into disloyal subjects. Government would do well to hold a medical board of skilled physicians on their selected candidates for posts of high authority and reject any one suffering from the anæmic form of gout or liver indigestion—until cured. If he gets a relapse he should be suspended.

CASE V.—Mrs. ——, tall, powerfully made, of pale complexion and rather anæmic, complained of frequent neuralgias and nervous headaches which utterly prostrated her for days at a time. Her appetite was most excellent, and she had been ordered liberal supplies of port, champagne and rich food under the impression that she was delicate. Iron in all forms had also been given without any good result. She was in no way weak, could take long walks and rides and play tennis vigorously. Inquiry as to previous illnesses elicited the fact that she had had an attack of gravel and had passed a small renal calculus. This cleared up the case at once. Her anæmia was gouty ; * the gravel and renal calculus passed, having been undoubtedly uric acid ; the neuralgias and headaches were also the result of gouty matters in the blood. I reduced the liberal dietary and stimulants and sent her to Vichy for a course of the alkaline waters there.

CASE VI.—Dr. ——, a tall, pale, thin, delicate-looking young man, complained of symptoms of liver with catarrhal

* A famous London physician has since confirmed this diagnosis.

dyspepsia and slight dysentery. Inquiry elicited a gouty family history, and that he had suffered from a slight attack of dry pleurisy, over the apex of the right lung, from a chill caught during the previous hot weather and from frequently recurring ulceration of the throat with concomitant ear inflammation (both of frequent occurrence in the gouty). The diagnosis was that his troubles and his pleuritic attack especially pointed to a gouty constitution, and that treatment directed against it would relieve him. He was therefore sent to Carlsbad. A few years later I met him looking well-nourished, healthy and with a rubicund visage—the picture of health. He stated that the Carlsbad physicians had quite concurred in the gouty view of the case, and that he had been quite a new man ever since.

The commonest symptoms complained of are intense headaches, or a persistent feeling of stiffness in the head, dulling the energy and blunting the faculties, (from which, however, a determined effort temporarily rouses the patient to a most efficient performance of any duty,) violent neuralgia, irritability of temper and great depression of spirits. These symptoms often alternate with periods when the patient feels perfectly well. He is an individual of various moods and tempers—one day well, another day not.

Women frequently suffer from this form of dyspepsia. With them it is often neurotic or ovarian in its origin, and exhibits marked exacerbation at or about the menstrual periods. The nervous energy called away to conduct these functions, apparently detracting from the power of the liver to do its work properly.

In men previous syphilitic attacks are often the cause of liver indigestion and a course of iodides clears it off.

Persons who eat meat in large quantities, thrice daily, often suffer from these symptoms, more

especially from irritability of temper. All are familiar with the fierceness and irritable tempers of dogs and cats fed on meat. Meat-eating is to a great extent an acquired habit. Once acquired it is with difficulty relinquished. Many delicate persons would find it impossible to do without the concentrated form of nourishment contained in meat. But there are others, more especially those of a gouty constitution, who could equally well do without it and to whom it is supremely injurious—sowing in them the seeds of disease and early death. A great deal of nonsense is talked about the impossibility of doing without meat—that we should get weak, run down, &c., &c. A few days ago I examined 30 Sikh recruits, all over 6 feet in height, fine, strong, active men, in the perfection of vigour and muscular development. These men had hardly ever tasted meat!

Many people of gouty constitution would permanently avert the disease if they became modified vegetarians. They might do this without being too strict about it, *i.e.*, they might take meat soups, eggs and fish with brown and meat gravies and butter and milk. Dal or dried peas contains the same amount of nitrogenous matter as beef and mutton. Vegetable nitrogen seems not to have the same faculty for going wrong during digestion in the liver that animal nitrogen (derived from meats) has. Vegetarians suffer from gout to only an infinitesimal extent compared to meat eaters. A diet in which meat is replaced by fish is often as efficacious as pure vegetarianism.

On one point I disagree with the Carlsbad physicians. They allow tropical patients a diet too rich in

meats. This consequently fails to give the liver that rest from work it requires.

Treatment.—The subjects of liver indigestion are generally more or less of a gouty constitution. This means a secondary or liver indigestion of animal food. The treatment therefore resolves itself into diminishing the consumption of animal food or replacing it with vegetable food found by experience to be incapable of producing the symptoms of liver indigestion. A fish and farinaceous diet is often equally efficacious. Abstinence from alcoholic liquors should also be practised as much as possible as they interfere with the process of liver digestion. Daily exercise in good, fresh country air is indispensable. Faradisation over the liver often has a most beneficial effect. Above all a yearly course of Carlsbad will be necessary to put the liver into proper working order. This is by far the most important part of the treatment, as everything depends on that organ being induced to work properly.

Diabetes, owing to the frequency of its occurrence in the tropics, may, perhaps, be considered a tropical affection. For it, in the early stages of the slighter cases, Carlsbad is a cure, and in the later stages, a safe palliative, prolonging life, often for over twenty years. Gluten and almond bread or biscuits should be given with a meat dietary.

Of the cure of gout, rheumatism and gall stones by Carlsbad it is not within the scope of this little work to treat. I must, however, urge upon sufferers from these maladies to try Carlsbad. They will seldom be disappointed.

CHAPTER IX.

HINTS FOR TROPICAL RESIDENTS AND RETIRING OFFICIALS

Hints on how to maintain health in the tropics—Water—Food—Clothing—Prevention and treatment of chills—How to grow fat—How to grow thin—Hints to retiring officials—Wasted furlough.

How to maintain good health in the tropics.—A great deal, not alone of the success in life but also of the enjoyment of it, depends on maintaining a good state of health. I have endeavoured to point out how disease assailed us in the tropics by undermining our digestive and blood-purifying organs and how this could be remedied by courses of Carlsbad, bathing, diet, exercise and electrical treatment. In the vast majority of cases this can be carried out in the hills. Unfortunately, people usually go down from the hills at the time of year when they really begin to be bracing. The hill climate is at its best in October, November and December; and if you really want to get braced without incurring the expense of a trip to England, take your leave during these months. If possible a marching tour should be undertaken. Life in a hotel or bungalow will not brace the system in anything like the same way.

By judicious repetitions of these measures at intervals of two or three years, illness may be averted and good health maintained. Never permit yourself to get too far run down in the tropics. The point from

which it is impossible to stop the downward course is very easily reached.

Malarial organisms gain entrance into our system to a great extent through the **water** we drink. This should always be boiled in order to thereby destroy them.

Never drink water which has been inside a *mussuck* or any leathern vessel. Once one of these vessels becomes tainted with foul water it is impossible to ever cleanse it again. Filters are a snare and delusion. You never can depend on their being kept clean. A dirty filter is worse than none. Instead of purifying, it infects the water with the collected and putrefying impurities of days, weeks or months. Have water brought from the tap or well in an enamelled iron jug—boil it, put it back into the same jug again and lay a clean napkin over its mouth to keep out flies, dust, &c.

If you get any filter—get a Berkfeld. This pumps water through a layer of fine kaolin—thus freeing it from all living germs.

Many persons imagine that soda-water must be always clean and pure. Like many other popular impressions, this is a wrong one. Disease germs are not destroyed by the process of manufacture.

As to food, none save invalids or very delicate women or children should eat meat more than once a day. Never eat very acid, or unripe or unsound fruits. Have fruits made into stews as often as possible. Eat plain, simple food,—chops, joints, fowl, game, and avoid made dishes and *rechauffées*. One of the most fruitful causes of illness is eating too much. Eat a little, slowly, and masticate it thoroughly.

Hot weather clothing.—The general rule is to clothe yourself so as avoid a chill. Theoretically the best way to do this is to wear pure woollen under-clothing next the skin. Cartwright and Warner's or Jaeger's thinnest undervest can be worn in the cold season, but in the hot few can stand them. They are too warm and produce too much skin irritation. There are several alternatives, *viz.*, undervests or shirts made from the following: silk and wool, Ceylon flannel (a mixture of wool and cotton), cotton twill lining an absorbent material made by the Elgin and Muir Mills, Cawnpore), or old flannel from which the coarse nap has been already worn off by previous wear.

I have found shirts made of Cawnpore twill with suits of thin flannel worn over them the best hot weather day costume. With it no undervest need be worn, and thus the risk of prickly heat reduced to a minimum. For night wear, a good plan is to have some ordinary cricketing flannel made up into sleeping suits. Wear these all through the cold weather and have them frequently washed. By the onset of the hot weather, the flannel will have lost its rough, irritating surface and grown so smooth as to be non-irritating. As long as you are young, vigorous and healthy, chills will not affect you much. When they begin to do so it is an indication that the constitution is suffering from the climate. At night in the hot weather we are especially liable to chills. The body becomes drenched with perspiration during sleep. This is what is known physiologically as a *paralytic secretion* or sweat of exhaustion. It is therefore very necessary to wear night clothing sufficiently thick and absorbent to prevent chilling.

After violent exercise when the clothing is drenched with perspiration an overcoat or warm wrap should be put on. Even this is often insufficient to prevent chill, and it is much safer and better to have a complete change of clothing and a rub down with a towel or a tepid tub.

Treatment of chill.—A hot bath of about twenty minutes' duration—mustard or linseed poultice or hot water bag over stomach and liver. The patient should be put to bed after the bath and a warm drink given. An aperient pill at night and a saline aperient draught in the morning for a few days will carry off any further ill-effects. Prompt treatment of this kind may often save a patient from abscess of the liver and death.

Service in the tropics produces, in many instances, two types of figure,—the abnormally fat and the abnormally thin. I know a number of thin people the absorbing aim and object of whose existence it is to **grow stout**. A course of Carlsbad often makes these people stout. This is ascribed to its action on the mesenteric glands and lymph channels through which fatty matters are absorbed into the system—these are opened up and obstructions and indurations in them dissolved and removed. At the same time the digestive powers are improved. A general increase of nutrition and body weight is the result. (See Case No. VI.)

Au contraire, the fat people are consumed with a desire to **grow thin**. Excessive fat is always a sign of perverted nutrition or of inferior quality of blood. Fat people, especially those who get fat early in life, have not good prospects of longevity. Insurance

Companies charge them a much higher premium. In treating such cases the cause of increasing fatness must be found out and treated accordingly. M. Zola, Mr. Labouchere, and other famous characters have been most successful in reducing their bulk. When fatness depends either on functional derangements of the digestive organs or on unhealthy qualities of blood, a course of the Carlsbad waters are most efficacious. The Marienbad waters are even more so. They act, of course, in the usual way by setting right the deranged digestive organs and purifying the disordered blood.

These antagonistic effects of Carlsbad in obesity and leanness in plethora and anæmia, in diarrhœa and in constipation are remarkable and worthy of note. "This was sometime a paradox, but now the time "gives it proof."

Of the merits of Ebstein's and other systems of banting I can say little. It is as efficacious as any other plan to *abstain from fluid of all kinds during meals* and not to take any until two or three hours later.

Science has recently placed in our hands a medicine which has the remarkable power of reducing body weight rapidly, without being in itself disagreeable or inconvenient to take, whilst there is no necessity to submit the patient to any irksome system of dietary, he is left free to eat and drink whatever he pleases,—I allude to the extract of thyroid gland. This is made up in tabloids which can be carried about loose in the waistcoat pocket and taken unobserved even when dining out. These **thyroid tabloids** can be procured from any chemist.

They should be taken only under the directions of a medical man, however, and their effects should be carefully watched by him. They are not by any means devoid of danger.

CASE VII.—Mrs. ——, aged 30, weight 16 stone, complained of a common uterine disorder. Her gums and mouth were ulcerated and her blood in a very bad state. Her great bulk prevented her being able to move about much or take any exercise. As the treatment of her case extended over some months I determined to get her bulk reduced, and put her on a mild course of Carlsbad, which improved her blood and digestion greatly. To effect a more rapid diminution in weight two thyroid tabloids were given every morning. She rapidly thinned down without getting too weak or low, and about four months later I heard of her being able to ride and play tennis again.

Hints to Retiring Officials.—The fitness of a patient to winter in England after many years of Indian service is a point often difficult to determine,—even for a physician of experience and skill. He will be greatly aided by a concise written statement of the medical history of the case.

When the internal organs are undermined by long tropical residence, transference to a cold climate often results in death or serious illness. The daily papers furnish us with numerous instances of such cases.

In giving advice to such a case the physician must be guided by the presence or absence of any enlargement of the liver or spleen, of malarial degeneration of the heart, of chronic diarrhoea or dysentery, of kidney mischief, or of threatened pulmonary trouble. The personal equation in each case is a powerful determining factor. It must also be remembered that after the age of forty has been reached, the recuperative powers begin to decline apace, and that

great reparative changes cannot be depended upon to occur with the same certainty as in early life.

About three years in a good climate are necessary to work the malaria out of the system of a man of about forty. A yearly course at Vichy or Carlsbad greatly accelerates the process. Retired officials should not winter in England for the first two or three years, if delicate.

If there is organic disease of any organ or malarial degeneration of the heart, the idea of retiring to a cold country should be permanently abandoned. Persistence in doing so will only end in disaster, removing perhaps the bread-winner from a sphere of usefulness to his own family, he could in a milder climate have occupied for many years. When men have families depending on a continuance of their pension for education and a start in life, these points all become of the most vital importance.

Tropical service lays its indelible mark on most of us and few return home with constitutions unimpaired. There are, of course, some remarkable exceptions —men of such pristine vitality and constitutional vigour that nothing affects them much.

Wasted Furlough.—Many persons live in the tropics for six or seven years without suffering from actual attacks of ague. Their constitutions have nevertheless become affected. When they go home on furlough to a cold climate, they are prostrated by frequently recurring attacks of ague. Their furlough is thus wasted ; they return to the tropics unimproved in health and soon breakdown again. These cases are always benefited by a course of hydropathic treatment followed by a course at Carlsbad.

APPENDIX.

Methods of applying electricity to the liver, spleen and abdominal organs as a remedy for tropical congestion.

Procure a small medical induction apparatus worked by one or two potassic bichromate cells. Screw the ends of the flexible cords connected with the cylindrical handles, usually supplied with this machine into the binding screw terminals of the secondary coil. These are usually marked S + &—on the machine. Insert sponges moistened with solution of ordinary table salt into the handles. Put the machine in action by inserting the zinc rod into the battery. Apply one sponge over the liver—the other over the opposite side of the body. Move both sponges about according to where you desire the current directed. Regulate the strength of the current by moving the iron core of the induction coil of the machine up or down. Commence with the weakest current and gradually increase it. Apply for only five minutes to start with—never exceed 15 minutes.

To faradise the splanchnic nerves apply one handle to the pit of the stomach (epigastric region), pressing deeply and firmly down, and the other to the middle of the back on a higher level—between the lowest angles of the shoulder blades. This will be pretty certain to give a diffusion current which will reach the splanchnic nerves and so contract the muscular coats of the abdominal blood vessels. I have not found this method give rise to any injurious inhibitory action of the vagus.

Another way is to stand in a tin tray containing salt solution into which one handle from the machine is led. Apply the other sponge and handle over the abdomen and to the middle of the back or pit of the stomach so as to affect the splanchnic nerves. This nerve is got at best from the back, and it will probably be necessary to get another person to apply the

handle to the back unless it can be fixed somewhere so that the patient can lean his back against it. Where it is wished to dispense with the help of a second person the latter method is useful. The use of a tray to stand in also leaves one hand free with which to regulate the machine and strength of the current.

Messrs. Arnold and Son, the well-known instrument-makers of West Smithfield, London, have, at my suggestion, made up cases containing the battery coil, handles, tray and everything necessary for carrying out this treatment, at a cost of about £4. It can be procured from them direct or through any good chemist.

Dry cell batteries do not last in India and electro-magnetic machines get out of order. This treatment is founded on the results of experiments on animals. When the splanchnic nerves are cut the abdominal organs become congested with blood and resemble those of a malarial patient. Mere tropical residence induces the same condition.

It is this abdominal engorgement which renders us so depressed in the hot weather. This condition can be remedied and the blood driven out of the congested area in two ways :—

1. By electrical stimulation as described.
2. By wearing a tight belt or *cummerbund* around the waist. Natives in wearing *cummerbunds* have thus unconsciously adopted an excellent remedy for climatic defects. I would recommend the adoption of both these to tropical patients.

Electricity applied in this way I have found to do much in relieving the lassitude and digestive disturbances incidental to the hot season both in the plains and hills. It also often stimulates a torpid liver. My own confidence in it is such that I keep a machine continually ready for use in my bath room and use it when tubbing night and morning throughout the hot season—if I feel out of sorts. It relieves that horrible feeling of pain and weariness in the body and limbs so many experience.

It must not be supposed that it will make one feel as well as in a cool climate. Nothing will ever do that. Often, however, when we are skimming on the outside edge of the borderline

between health and disease, in the hot weather, it enables us to keep well on the healthy side of that line, without being obliged to go to the hills or for a sea voyage. This is no slight advantage. I consider this treatment not alone a partial remedy for abdominal congestion, but also a partial preventive of it and of the deteriorating effects of the climate. No remedy short of a complete change to a cool climate can be complete.

Surgeon-Captain Dyson's theory of hill diarrhoea is that it is "caused by insoluble particles of mica suspended in the drinking water." Mica has been found abundantly present in the water where diarrhoea is most prevalent. I have little doubt that mica would cause diarrhoea in those whose digestive organs are undermined by malaria. This theory, however, does not explain why hill diarrhoea lasts only until about 11 A.M. daily.

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